THE ATHENÆUM

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No. 1558. LONDON, SATURDAY, SEPTEMBER 5, 1857. PRICE FOURPENCE Stamped Edition, 5d.

KING'S COLLEGE, LONDON.—INSTRUCTION IN PHOTOGRAPHY.—Mr. T. F. HARDWICH has a CLASS every Morning for INSTRUCTION on the SCIENTIFIC PRINCIPLES of PHOTOGRAPHY, illustrated by Practical Demonstrations in the Art. For a Prospectus apply to J. W. CUNNINGHAM, Esq.

R. W. JELF, D.D., Principal.

ARCHITECTURAL PHOTOGRAPHIC ASSOCIATION.

President—C. R. COCKERELL, Esq. R.A.

Trustees—P. HARDWICK, Esq. R.A.; W. TITE, Esq. M.P.; SYDNEY SMIRKE, Esq. A.R.A.

Treasurer—THOMAS H. WYATT, Esq.

The Committee are desirous of completing the List of Subscribers for 1857, now been 300 and 400 in number, as early as possible, in order to estimate the extent to which they may avail themselves of the services of eminent Photographic Artists at Home and Abroad, with whom they are making arrangements. They calculate upon being able to issue to Subscribers, for each Guinea subscribed, at least nine or ten Photographs, averaging say 12 in. by 10 in, which may be chosen from a considerable number of fine subjects.

The Prospectus and Rules will be forwarded on application to ROBERT HESKETH, Hon. Sec.

95, Wimpole-street, W.

METROPOLITAN SCHOOL of SCIENCE, applied to MINING and the ARTS.—The Prospectus for the ensuing Session, 1857—8, (containing information about the Lectures, Laboratories, Fees, &c.) is ready, and will be sent on application to TREVHAM REEKS, Esq., Museum of Practical Geology, Jermyn-street, London.

RODERICK I. MURCHISON, Director.

THE PROFESSORS' COLLEGE, 18, Hanover-square.—The MICHAELMAS TERM will COMMENCE on MONDAY, September 21.

Applications to be made to the Secretary at the College.

THE PROFESSORS' COLLEGE, 18, Hanover-square.—Mr. C. E. HORSLEY begs to announce that his PIANOFORTE and HARMONY CLASSES, at the above Institution, will COMMENCE on MONDAY, September 21st. For terms and other particulars apply at the College.

THE PROFESSORS' COLLEGE, 18, Hanover-square.—The CHORAL CLASS, for the Practice of Sacred and Secular Music, will COMMENCE on FRIDAY EVENING, October 2nd, at Eight o'clock.

Director and Conductor, CHARLES E. HORSLEY.

For particulars apply at the College.

THE PROFESSORS' COLLEGE, 18, Hanover-square.—Mr. T. M. ELTON begs to announce that his CLASSES for DRAWING, PAINTING and PERSPECTIVE, at the above Institution, will OPEN on TUESDAY, September 22nd.

THE PROFESSORS' COLLEGE, 18, Hanover-square.—Mr. G. F. GRAHAM begs to inform his Friends that his CLASSES for the Instruction of Young Ladies in ENGLISH GRAMMAR, COMPOSITION, LITERATURE, and MODERN HISTORY, will OPEN at the above Institution on FRIDAY, September 25th.

LONDON HOSPITAL MEDICAL and SURGICAL COLLEGE, Mile End.

The next WINTER SESSION will COMMENCE on THURSDAY, October 1, 1857, when the INTRODUCTORY LECTURE will be delivered by Mr. WORDSWORTH, at 3 P.M.

Perpetual fee, qualifying for the examinations at the London University, Royal College of Surgeons, and Apothecaries' Hall, 84 guineas, payable in two instalments of 42 guineas each, at the commencement of the first two sessions of attendance.

Perpetual fee to the Lectures alone, 50*l.*

Students can make special entries to Lectures or Hospital Practice.

Further particulars and prospectuses can be had on application to Dr. Parker, Hon. Secretary, 22, Finsbury-square, or at the College.

SOUTH KENSINGTON MUSEUM.—The Museum will be open free on Mondays, Monday Evenings, Tuesdays, Tuesday Evenings, and Saturdays. The Students' days are Wednesdays, Wednesday Evenings, Thursdays, and Fridays, when the Public are admitted on payment of 6*d.* each person. During the month of September the hours are from 10 to 5 in the day time, and from 7 to 10 in the evening.

"KINDNESS—ITS POWER OVER MAN AND ANIMALS."

MR. WILLIAM KIDD will, by special desire, deliver his POPULAR LECTURE as above, at the ROYAL POLYTECHNIC INSTITUTION, REGENT-STREET, on MONDAY EVENING next, September 7, at Eight o'clock precisely.

MR. KIDD'S LONDON AND PROVINCIAL LECTURES.

MR. WILLIAM KIDD'S NEW LECTURES for 1857-8, are unusually choice, and very widely varied. They will be found to embrace ALL that can tend to render Life rationally enjoyable, induce to habits of Thought, exalt the Intellect, enlarge the Mind, establish Brotherly Love, make God worshipped, Earth a Paradise, and the World's inhabitants harmlessly happy.—New-road, Hammersmith, September 5.

ART-UNION OF GLASGOW.—In compliance with the general request, THE EXHIBITION of PRIZE PAINTINGS, &c., now on view at the Gallery of the Old Water-Colour Society, 5*a*, Pall Mall East, WILL REMAIN OPEN UNTIL SATURDAY, the 12th instant. Admission Free.

FORTIFICATION, MILITARY DRAWING and LANDSCAPE PAINTING.—Mr. FAHEY, whose Pupils have taken the highest Honours at the Military Colleges of Woolwich and Addiscombe, has by recent arrangement a portion of time disengaged. For Terms, address to 26, Drayton-grove, Old Brompton, S.W.

UNIVERSITY COLLEGE, LONDON.

JUNIOR SCHOOL.

Under the Government of the Council of the College.

Head Master—THOMAS HEWITT KEY, A.M.

The SCHOOL will RE-OPEN on TUESDAY, Sept. 22, for new Pupils. All the boys must appear in their places without fail on Wednesday, the 23rd, at a quarter-past Nine o'clock.

The Session is divided into three Terms, viz., from the 22nd of September to Christmas, from Christmas to Easter, and from Easter to the 1st of August.

The yearly payment for each Pupil is 18*l.*, of which 6*l.* is paid in advance in each term. The hours of attendance are from a quarter-past Nine to three-quarters past Three o'clock. The afternoons of Wednesdays and Saturdays are devoted exclusively to Drawing.

The subjects taught are—Reading, Writing, the English, Latin, Greek, French, and German Languages; Ancient and English History; Geography, Physical and Political; Arithmetic and Book-keeping; the Elements of Mathematics, Natural Philosophy, and Chemistry; Social Economy, Vocal Part Music, Singing, Gymnastics, Fencing, and Drawing. Any Pupil may omit Greek or Greek and Latin, and devote his whole attention to the other branches of education. There is a general examination of the Pupils at the end of the Session, and the Prizes are then given.

At the end of each of the first two Terms, there are short examinations, which are taken into account in the general examination. No absence by a boy from any one of the examinations of his classes is permitted except for reasons submitted to and approved by the Head Master.

The discipline of the School is maintained without corporal punishment. A monthly report of the conduct of each Pupil is sent to his parent or guardian.

Further particulars may be obtained at the Office of the College.

CHAS. C. ATKINSON, Secretary to the Council.

The College Lectures in the Classes of the Faculty of Medicine will commence on Thursday, October 1; those of the Faculty of Arts on Tuesday, Oct. 13.

August, 1857.

THE GOVERNESSES' INSTITUTION, 34, Soho-square.—Mrs. WAGHORN, who has resided many years abroad, respectfully invites the attention of the Nobility, Gentry, and Principals of Schools to her Register of English and Foreign GOVERNESSES, TEACHERS, COMPANIONS, TUTORS, and PROFESSORS. School Property transferred, and Pupils introduced in England, France, and Germany. No charge to Principals.

MONS. F. DE PORQUET, Author of 'Le Trésor,' after an absence of Fourteen Years from Tavistock-street, has RETURNED TO TOWN, where he continues giving LESSONS on his Popular Method to Schools, Institutions, and Families within fifty miles of London.—Address Lodge, Crosby Hall, City, and 64, Albany-street, Regent's Park.

DR. C. F. MEYER receives PUPILS of the age of Fourteen and upwards for Instruction in GERMAN, FRENCH, and MATHEMATICS. Terms moderate. Most satisfactory references.—Address Montbrillant, Geneva.

HASTINGS.—WEST HILL HOUSE.—CLASSICAL, MATHEMATICAL and COMMERCIAL SCHOOL.

Conducted by the Rev. W. PORTER.

The Course of Instruction includes the usual branches of a sound and liberal education. It will be Mr. Porter's aim to adapt his system to the growing wants of the age, and he will be assisted by Gentlemen well qualified in the use of modern educational appliances.

Terms, from 40 to 50 Guineas per annum. Prospectuses forwarded on application.

PREPARATORY SCHOOL for the Sons of Gentlemen, Vere House, Mortimer-road, Kilburn, London.—Mr. GEORGE OGG, L.R.C.P. and Mrs. OGG beg to announce that the Michaelmas Term COMMENCES 15th September.—The situation is healthful, and the educational and domestic arrangements well suited to the advancement and comfort of the Pupils.

QUEEN'S COLLEGE, LONDON, 67 and 68, HARLEY-STREET.

Incorporated by Royal Charter, 1853, for General Female Education, and for granting Certificates of Knowledge.

Visitor—The Right Hon. and Right Rev. the Lord Bishop of London.

Chairman of the Committee of Education—The Very Rev. the Dean of Westminster.

Deputy-Chairman—The Rev. E. H. Plumptre, M.A.

Lady Resident—Mrs. Mills.

The CLASSES of this College will be RESUMED for the year 1857-8, on MONDAY, October 5th.

The Dean of Westminster—Church History.

W. Sterndale Bennett, Mus. Doc.—Instrumental Music.

Rev. F. A. Cock, M.A.—Arithmetic, Mathematics, Natural Philosophy.

E. Fusco, R.A.—Italian.

Rev. F. Garden, M.A.—Theology, Mental and Moral Philosophy.

John Hullah—Vocal Music, Harmony.

Alphonse Mariotte, B.A.—French.

Rev. F. D. Maurice, M.A.—English Literature, Modern History.

Rev. M. Meyrick—Latin.

Rev. C. G. Nicolay, F.R.G.S.—Geography, Ancient History.

Rev. E. H. Plumptre, M.A.—English Language and Composition.

G. Scharf, F.S.A.—Figure Drawing.

Henry Warren—Landscape Drawing.

Gottlieb Weil, Ph. D.—German.

Fees for Pupils taking the entire Course, 26*l.* 5*s.* a year, or 9*l.* 9*s.* a term, with an entrance fee of 1*l.* 1*s.*—Fees for Pupils attending single Classes—2*l.* 2*s.* a term for Classes meeting twice, and 1*l.* 6*s.* 3*d.* for those meeting once a week.

N.B. Pupils previously belonging to the College will be admitted as non-Compounders at the old scale of Fees.

PREPARATORY CLASS for CHILDREN above Eight years of age.

Lady Superintendent—Miss PARRY.

Assistant—Miss HAY.

This Class will be RE-OPENED on THURSDAY, September 24th.—Fees: 1*l.* 15*s.* a year for Pupils under, and 2*l.* for those above, Thirteen, with an entrance Fee of 1*l.* 1*s.*

Pupils are received as BOARDERS within the College by Mrs. Williams.

Prospectuses and forms of application for admission may be obtained by application to the Secretary, or Lady Resident.

E. H. PLUMPTRE, Secretary and Dean.

THE REV. R. A. VAUGHAN, B.A., has arranged to RECEIVE into his Family TWO PUPILS who may require assistance in preparing for the Classes of University College, or in studying for the B.A. Degree. Terms 130*l.* the Academic year. For Pupils not attending College Classes, 160*l.*—Address 19, Alexander-street, Westbourne Park.

ORIENTAL LANGUAGES.—The Rev. G. SMALL (ten years a Missionary in India), assisted by a Gentleman long resident in Persia, gives INSTRUCTION in Hebrew, Arabic, Sanscrit, Hindustáni, Persian, and Bengáli, at No. 3, Leadenhall-street, or at Schools and Private Residences in London and Environs.—Address 1, St. John's grove, Croydon, S.

LADIES' COLLEGE, the WOODLANDS, Union-road, Clapham-rise.

The Session will COMMENCE on MONDAY, September 14th, when the Classes will be formed for French, German, Italian, History, Algebra, Mathematics, English Literature, Drawing, Singing, Music, &c.

On WEDNESDAY, September 23rd, the Rev. CHARLES P. SHEPHERD will commence a Course of Lectures on the Early History and Literature of England.

On MONDAY, October 12th, Dr. LANKESTER will give a Lecture, introductory to a Course, on the Advantages of the Study of Botany.

On THURSDAY, October 15th, Dr. LETHEBY will commence a Course of Lectures on the General Facts and Principles of Chemistry, with Experimental Illustrations of their Application to the Common Purposes of Life.

The Woodlands, Sept. 1857.

EDINBURGH ACADEMY.

Incorporated by Royal Charter, 5 Geo. IV.

The NEXT SESSION of the EDINBURGH ACADEMY will COMMENCE on THURSDAY, 1st October, at 10 o'clock, when Mr. THOMPSON will OPEN the FIRST or JUNIOR CLASS.

On TUESDAY, the 29th, and WEDNESDAY, the 30th September, attendance will be given at the Academy, from 12 to 3 o'clock, for the Enrolment of New Pupils. Any additional information may be obtained from Mr. PATTISON, Clerk to the Directors, No. 21, St. Andrew-square, Edinburgh.

(See also Advertisement in this Paper of 1st August.)

BOARDERS are received by—

The RECTOR, 62, Great King-street;
Mr. THOMPSON, 3, Brandon-street;
Mr. MACLEOD, 3, Eyre-place; and
Mr. MACLEAN, 5, Comely Bank.

THE GRANGE HOUSE SCHOOL, EDINBURGH,

CONDUCTED BY MR. DALGLEISH, (formerly Head Master of Park Place Institution,) AND MR. W. S. DALGLEISH, M.A., University of Edinburgh;

With the Assistance of Resident and Visiting Masters.

VISITING MASTERS.

Mr. A. Beljame, B.A. (Paris), 34, Castle-street.
Mr. F. B. Calvert, M.A., 25, York-place.
Mr. F. Chaumont, 44, Castle-street.
Mr. A. Gilmour, 23, Dundas-street.
Mr. J. Laidlaw, M.A., Edinburgh.
Dr. Lemmi, 1, Rutland-street.
Professor Lisbon, Elm Cottage, Whitehouse-gardens.
Mr. Lowe, 53, Frederick-street.
Lieutenant J. Mackie, 4, Raeburn-place.
Dr. Nachot, 113, Princes-street.
Signor Orsini, 7, George-street.
Mr. G. Robertson, (Public Seminaries, Dundee).
Messrs. Roland, 30, Gayfield-square.
Mr. Gourlay Steel, A.R.S.A., 4, Randolph-place.
Mr. J. C. Steen, 7, Argyle-square.
Mr. J. T. Surenne, 66, Great King-street.
Mr. W. Swan, F.R.S.E., 4, Duke-street.
Mr. J. C. Wintour, 1, St. Cuthbert's-glebe.

LECTURERS.

Mr. W. S. Dalgleish, M.A.
Dr. M. Forster Heddle, 8, Clarence-street.
Dr. Stevenson Macadam, F.R.S.E., 11, Brandon-street.
Mr. W. Swan, F.R.S.E.

This ESTABLISHMENT will be OPENED on the 1st of OCTOBER, for the EDUCATION of a LIMITED NUMBER of RESIDENT PUPILS.

The GRANGE HOUSE SCHOOL is designed to afford increased facilities for educating Young Gentlemen of the Upper Ranks; the course of Instruction having specially in view the preparation of the Pupils for the Universities, for Mercantile pursuits, or for entering the Civil and Military Services at home and in India.

In accordance with the leading design of the School, the stated Class-Instruction is confided exclusively to Professional Teachers of established reputation, to each of whom a particular department of instruction is assigned.

The Private studies of the Pupils are superintended by Mr. W. S. Dalgleish, the Vice-Principal, and a staff of Resident Tutors, Graduates of English, Scottish, and Continental Universities.

The Head Master devotes his whole time to the inspection of the Classes, the individual Training of the Pupils, and the direction of the general arrangements of the Establishment.

The Grange House, a baronial residence, is situated about a mile to the south of Edinburgh, and is consequently easily accessible to Masters professionally attending the School. The locality is widely known for its salubrity; and the Mansion-house, with inclosed Pleasure-grounds, Gardens, and Park, attending over several acres, is peculiarly suitable for a Private Boarding and Scholastic Establishment of the highest class.

The Sleeping Accommodation is of a superior kind, and the whole arrangements for promoting the health and personal comfort of the Pupils have been completed on the plan of the best English and Continental Boarding Schools.

The Domestic Arrangements of the School are under the immediate superintendence of Mrs. Dalgleish, and experienced Assistants.

Prospectuses, and Copies of the Printed By-Laws of the School may be obtained by parties interested, on application to the Head Master.

Address The Grange House, Edinburgh, N.B.

A MARRIED CLERGYMAN, Double First Classman at Oxford, and formerly Fellow and EXAMINER AT THE INDIA HOUSE, receives at the Rectory, 7 miles from London, a LIMITED NUMBER of PUPILS for College, the Army, India, &c. Terms moderate, and high reference.—Address Rev. Dr. GILES, Perivale Rectory, near Harrow.

PRIVATE TUITION ABROAD.—A Married Gentleman, a Cambridge Graduate, and respected Prizeman, who has resided many years in France, RECEIVES into his Family FOUR PUPILS, to whom he devotes the whole of his time. His house is a detached château, most eligibly situate on the coast. He has constant experience in Tuition, and his Pupils are young persons of the highest connexion. Terms, including extra Professors, from 100 to 150 guineas, according to age.—For address apply to 'H. I. D., 'Notes and Queries' Office, 186, Fleet-street.

GERMAN, French, Italian.—9, *Old Bond-st., Piccadilly.*—Dr. ALTSCHUL, Author of 'The First German Reading Book,' &c. Examiner Roy. Coll. Pre. M. Philolog. S., Prof. Elocution.—TWO LANGUAGES TAUGHT in the same lesson or alternately, without any addition to the terms, at the Pupils' or at his own House. Each Language spoken, in his PRIVATE Lessons and select separate CLASSES. Preparation (in Languages) for mercantile and ordinary pursuits of life, the Universities, Army and Civil Service Examinations.

THE QUEEN'S COLLEGE, BIRMINGHAM.

The SESSION of 1857-58 will commence on FRIDAY, the 2nd of October, when the INTRODUCTORY ADDRESS will be delivered by the Principal, J. R. BOOTH, Esq., M.D., at two o'clock.

The LECTURES upon the various branches of Medical Science are as follows:—

THE WINTER SESSION.

Surgical Anatomy—Prof. Sands Cox, F.R.S., Fellow of the Royal College of Surgeons of England, Senior Surgeon to the Queen's Hospital.
Descriptive Anatomy—Prof. Bolton, Fellow of the Royal College of Surgeons of England, Surgeon to the General Hospital.
General Anatomy and Physiology—Prof. Heslop, M.D., Physician to the Queen's Hospital.
Practical Anatomy, with Superintendence of Dissections—Mr. Oliver Pemberton, M.R.C.S., Surgeon to the General Hospital, and Mr. T. F. Jordan, M.R.C.S.
Chemistry—Prof. George Shaw, Fellow of the Geological Society.
Principles and Practice of Medicine—Prof. James Johnstone, M.D. (Cantab.), Fellow of the Royal College of Physicians of London; Senior Physician to the General Hospital.
Principles and Practice of Surgery—Prof. Sands Cox, F.R.S., Senior Surgeon of the Queen's Hospital.
Comparative Anatomy and Zoology—Prof. R. C. R. Jordan, M.D., M.R.C.S.

THE SUMMER SESSION.

Materia Medica and Therapeutics—Prof. Alexander Fleming, M.D. (Edin.), Physician to the Queen's Hospital. Prof. Knowles, F.L.S., Fellow of the Royal College of Surgeons of England; Surgeon to the Queen's Hospital.
Midwifery and Diseases of Women and Children—Prof. Samuel Berry, Fellow of the Royal College of Surgeons; Surgeon to the Magdalen Asylum.
Forensic Medicine—Prof. John Birt Davies, M.D. (Edin.), Licentiate of the Royal College of Physicians, London. (Extra urbem.) Senior Physician to the Queen's Hospital.
Botany and Vegetable Physiology—Prof. Knowles, F.L.S. The Students have, under certain regulations, access to the Botanical Gardens.
Practical Chemistry—Prof. Shaw, F.G.S.
Histology, Supplementary to the Course of Physiology—Prof. Heslop, M.D., Physician to the Queen's Hospital.

A MEDICAL TUTOR resides in College, and it is his especial province to prepare the Junior Students, non-resident as well as resident, for the Matriculation Examination of the University of London; to devote daily a certain number of hours to the Senior Students, non-resident as well as resident, in the dissecting room, and to examine them from time to time upon the subjects of the various Lectures.

CLINICAL LECTURES.—Clinical Lectures will be delivered weekly by the Professors attached to the Hospitals.

The WARNEFORD SCHOLARSHIPS.—Four Scholarships have been founded by the Rev. Dr. Warneford, of 10*l.* each, to be held for two years; to be conferred upon the Students who have resided in the College at least twelve months, who have been distinguished for their diligence and good conduct, who have been regular in their attendance on divine service, and whose attendance at the theological lectures has been regular.

The WARNEFORD GOLD MEDALS.—The interest of 1,000*l.* is applied for the institution of two Prizes, either in equal or unequal amounts. The essays written for these Prizes are to be of a religious as well as scientific nature. Subject, 'The Anatomy and Physiology of Respiration.'

The WEBSTER PRIZE.—Five Guineas offered by the late Joseph Webster, Esq., for the Student who may pass the best Examination in the French Language, continued by Baron D. Webster, Esq. Candidates will be required to translate some portion of an English author into French, as well as French into English. Three Candidates must compete for this Prize, or it will not be given.

The PERCY PRIZE.—Books of the value of Five Guineas are offered by John Percy, M.D., to the Student who may pass the best Examination in three German Works. There must be not less than two competitors.

SURGICAL CLINICAL PRIZE.—Prof. Sands Cox offers a Prize of Five Guineas (Books), for the best-reported Surgical Cases under his care at the Queen's Hospital.

The RATCLIFF PRIZE.—Ten Guineas (Books) are offered by Charles Ratcliff, Esq., for the best Essay 'On the use of Anæsthetics.'

The CLAY PRIZE.—Five Guineas (Books) are offered by John Clay, Esq., a former Student, for the best Essay 'On the various Positions of the Fœtus, and the causes which determine them.'

MUSEUMS.—Connected with the College, are Museums of Human, Comparative, and Pathological Anatomy, and Natural History, in all its branches, containing upwards of three thousand preparations, to which the Students will be admitted under certain regulations, without any additional fee.

The Library contains upwards of two thousand volumes.

There are two Laboratories in the College, fitted up with every convenience for the attainment of Practical Chemistry, and for the prosecution of Scientific researches.

COLLEGE EXAMINATIONS, as at the Universities, will be held at the end of each Term, in the respective Classes, at which every Student will be required to present himself.

The College is situated midway between the Queen's Hospital, in Bath-row, and the Birmingham General Hospital, in Summer-lane.

For information in the respective Departments, application may be made to Mr. Sands Cox, Dean of the Faculty, 34, Temple-row, or to Mr. Oliver Pemberton, Honorary Secretary to the Professors, 11, Temple-row.

Further information in reference to the Medical Departments, and respecting the Departments of Arts, Engineering, and Theology, may be obtained on application to the Warden.

OWENS COLLEGE, MANCHESTER (in connexion with the University of London).—Session 1857–8.

The COLLEGE will OPEN for the Session on MONDAY, the 12th day of October next. The examinations, preliminary to admission, hitherto required are for the present discontinued. The Session will terminate in July, 1858.

Principal—J. G. GREENWOOD, B.A.

The Trustees have to announce that Mr. Greenwood has been appointed Principal, in the place of Mr. Scott, who has resigned that office, though the Trustees are glad to state that the College retains the advantage of his valuable aid as Professor.

Courses of Instruction will be given in the following departments:—

Languages and Literature of Greece and Rome—Prof. J. G. Greenwood, B.A.
Comparative Grammar, English Language, and Literature—Prof. A. J. Scott, M.A.
Logic, Mental and Moral Philosophy—Prof. A. J. Scott.
Mathematics and Physics—Prof. A. Sandeman, M.A.
History—Prof. R. C. Christie, M.A.
Jurisprudence—Prof. Christie.
Political Economy—Prof. Christie.
Chemistry—Elementary Course—The application of Chemistry to the Arts and Manufactures, and Analytical and Practical Course, with Manipulation in the Laboratory—Prof. Edward Frankland, Ph.D. F.R.S. F.C.S.

N.B. In consequence of Dr. Frankland having accepted the appointment of Lecturer on Chemistry at St. Bartholomew's Hospital, the Professorship of Chemistry will shortly become vacant, and will be supplied without delay.—Due notice of the appointment of a successor will be given.

Natural History—The entire Course occupies two Sessions. The subjects for this Session are Geology and Botany—Prof. W. C. Williamson, M.R.C.S.L. F.R.S.
French Language and Literature—Mons. A. Podevin.
German Language and Literature—Mr. T. Theodores.

EVENING CLASSES FOR PERSONS NOT ATTENDING THE COLLEGE AS STUDENTS.

Languages and Literature of Greece and Rome (for schoolmasters and others)—Prof. Greenwood.
Mathematics and Natural Philosophy (for schoolmasters and others)—Prof. Sandeman.
Jurisprudence—Prof. R. C. Christie.
Natural History—Prof. Williamson.

N.B. Attendance upon these Courses, under the prescribed regulations, qualifies for admission to the Examinations for Degrees in Arts conferred by the University of London.

ADDITIONAL LECTURES ON WHICH THE ATTENDANCE OF THE STUDENTS IS OPTIONAL AND WITHOUT FEES.

On the Greek of the New Testament, by Prof. Greenwood.
On the Hebrew of the Old Testament, by Prof. Scott.
On the Relations of Religion to the Life of the Scholar, by Prof. Scott.

SCHOLARSHIPS AND PRIZES.

The following Scholarships and Prizes have been founded for competition by Students of the Owens College, viz.:—

The Victoria Scholarship, for competition in Classical Learning; annual value 20*l.*, tenable for two years.

The Wellington Scholarship, for competition in the critical knowledge of the Greek Text of the New Testament; annual value 20*l.*, tenable for one year.

The Dalton Scholarships, viz., Two Scholarships in Chemistry, annual value 50*l.* each, tenable for two years; Two Scholarships in Mathematics, annual value 25*l.* each, tenable for not more than two years.

Dalton Prizes in Chemistry are also intended to be offered, the particulars of which will be published previous to the opening of the session.

The Dalton Prize in Natural History, value 15*l.* given annually.

For the better maintenance of discipline and superintendence of study out of class hours, arrangements are in progress according to which parents and guardians may place students during the day under the superintendence of an officer appointed to that charge. Those so entered will, for a fixed fee, have the advantage of being employed in study under his superintendence, and with his assistance when not employed in Lectures; and dinner will be provided within the College walls for such as may desire it. For Students not so entered, the College will, as hitherto, disclaim all direct responsibility, except during class hours.

Further particulars relating to the Courses and Terms of Instruction and the conditions upon which the Scholarships and Prizes may be competed for, will be found in a Prospectus which may be had from Mr. Nicholson at the College, Quay-street, Manchester, where applications may be made to the Principal on Monday, the 21st of September, and thence daily up to and including the 25th of September next, between the hours of ten and one.

JOHN P. ASTON, Solicitor and Secretary to the Trustees.

St. James's Chambers, South King-street, Manchester, August 28, 1857.

GOVERNESS.—WANTED, by a YOUNG GERMAN LADY (20), a SITUATION in a genteel Family to instruct Children, not above 13, in German, Music, and Singing. Terms moderate.—For particulars address Mr. H. O., 8, Terrace, Barnes, S.W.

PORTRAIT of GARRICK, Painted by PINE, FOR SALE, at GRITTEN'S Picture Gallery, 9, King-street, St. James's-square, S.W.

BROMPTON REPOSITORY of ART.—NO CHARGE for MOUNTING DRAWINGS, and the Framing neatly and cheaply executed. Winsor & Newton's, and Roberson's Colours, and other Drawing Materials, on precisely the same terms as at the manufacturers', with full allowance to the profession.—T. ORDISH, Brompton-row, next Brompton-square, S.W.

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LONDON, SATURDAY, SEPTEMBER 5, 1857.

REVIEWS

Post-Office Directory of Yorkshire. With Maps of the Three Ridings, engraved expressly for the Work, and Corrected to the time of publication. (Kelly & Co.)

A Directory commonly contains little more than long rolls of names, records of employments, and registers of residence. But this Yorkshire Directory contains more. It contains a well-digested history of the county, so arranged that the inquirer can speedily find the information of which he is in search. In fact, it is a *guide*, in the best sense of the word; but it is not one for a traveller to carry in his pocket. The lady in Ælian, who ate many pounds of meat daily, and blew the brazen trumpet in her leisure hours, till every house in her district shook to the foundation, might have been able to carry such a volume as this. But no modern lady would voluntarily undertake such a feat. The book should lie on a stout-limbed table, and should be brought to and taken from you, only, by that well-thewed servant of Fortunatus, tight-muscled Strongback.

The largest county in England deserved the largest of guides. County as it is, it is more extensive than some European kingdoms, and few are the German dukedoms that exceed it. It contains nearly six thousand square miles, and nearly four millions of acres, on which about two millions of inhabitants live, move, and have their being. Its chief towns begin to reckon their population by hundreds of thousands; its parishes correspond; that of Halifax, for instance, contains nearly seventy-six thousand acres, where one hundred and fifty thousand "souls" are led, misled, or go their own way.

It has been said of Aix-la-Chapelle that it is the city of great memories. So Yorkshire may be said to be the county of great memories. What a world of incidents and events is included between the periods when Constantine, the son of Chlorus, put on the Imperial purple at York, and Cromwell struck down hereditary monarchy in England, near by, at Marston Moor! It is now a county of two aristocracies —money and blood; and, we may add, that many of the lords of land who now pride themselves on race, descend from honest and hard-working ancestors who, a few years since, had neither "blood" in the heraldic, nor "money" in a mercantile sense.

Yorkshire, moreover, is peculiarly a county of palaces. Its seats deserve, for the most part, no less noble a designation. Near some of these the traveller will occasionally meet with a pretty, diminutive "hall," or coquettishly embowered "house," wherein, in these days, the younger sons of noble lineage dwell in happiness and honour with their wives and families. But they, to whom the social history of the county is familiar, know that these smaller residences were originally built for other occupants. Time was, when some Yorkshire landlords lived after the fashion of the pious and rascally Duke of Guise,—with a stately consort in the family mansion, and a lively *Traviata* at the house in the wood.

This sort of local sovereign no longer exists, and with it have disappeared the peculiar class of Yorkshire doctors, who oftener helped them to be ill than cured them of their maladies. Kind-hearted, hard-headed, deep-drinking fellows were those rollicking, riding apothecaries of the bygone days! They lived in the saddle, perhaps, during sixteen hours of the four-and-twenty, rode sixty miles a-day, and drank a glass of hot brandy-and-water for every five miles. The rail has done more than swept away feudality. It has furthered temperance. Travellers on the old roads knew well how "to lay the dust"; but where hogsheads were once emptied the foot of a glass is never now turned up to the sky. Drink has slain more men in Yorkshire than in any other district of equal extent and population. The county is now as sober as its neighbours, and as hearty and hospitable as ever.

Where lords who live *on* labour abound, still more abundant, of course, must be the classes who live *by* labour. Some of these follow occupations whose distinctive titles would puzzle not a few English people of the south. Among them we find manufacturers of hackles, steel-converters, vice-manufacturers, lumpers, raff-merchants, plain back manufacturers, and many others, whose names would perplex the brains of the children of Cockayne. In the hundreds of thousands of family appellations, we meet with fewer that are unusual or singular than we might fairly expect;—among them are Silversides and Witty, Lamplough, Swinchat and Pottage, Littlefair, Fatkin, and Dewear, Wincup, and Nequest. Raw, Pickles, Ake, and Lax seem to come close upon each other as a matter of course, and with them we have Fidlers, Flounders, Pennys, Farthings, and various others. There is also many a King, but only a few Sovereigns; and the ex-monarchical house of Tudor is now engaged in the profitable manufacture of white-lead.

We observe that the signs of Yorkshire inns very commonly and naturally take a sporting turn. There are very many, too, of another sort. Dewsbury commemorates the famous old Yorkshire tragedy in the "Babes in the Wood," while Ripley preserves the legend of an "Ass in a Bandbox." Sheffield has its "Bell Hag," and a couple of "Burnt Trees"; the "Cabbage" flourishes at Leeds; and Halifax has its "Cat at Window." We may mark, too, as out of the common way, the "Corner Pin," the "Flouch," "Frog Hall," and the "Gaping Goose." "Hark up to Nudger," we suppose refers to some celebrated hound in the vicinity of Saddleworth; and the "Harewood Arms, by E. Lascelles," at Wakefield, is a conjunction like that of the "Duke of Marlborough, by John Churchill." "Labour in Vain" sounds like an admonition to the workman who would spend half his earnings in liquor; and the "Naked Man" might be taken as a pictorial sermon as to what would possibly be his end after a course of classes and glasses at the "Labour in Vain," or any other such house. "Nineveh," too, may be taken as suggestive of destruction; but the "Old Cocks" have a crowing, cheerful, encouraging sound, as becomes a caravanserai. The "Skyrack" has a poetical turn with it, and the "Twelve o'clock Inn" probably conveys a hint to good fellows not to get into the "few short hours ayont the twal," which they are invited to spend at the "Warm Hearth-stone." We take our illustrations from the West Riding exclusively as a sample of tavern indications; and we may add that throughout this extensive Riding there is but one "Cromwell" and one "King Charles the First," but between them there are not less than two-and-forty "Shoulders of Mutton."

The North and East Ridings have only a few eccentric names over inn and tavern doors:—among them we may point out "Citta Dilla," "Creeping Kate," "Lady Bab," "Low Salutation," "Merry Legs," and the "Nonplus." There is one "Saddle"; but in the two Ridings there are only fifteen "Shoulders of Mutton": the West Riding appearing to have the monopoly of this article. Some of the inns remind us of far-away times, persons, and events,—the "Portobello," less dreary, we hope, than its Dublin namesake, "Duke William," "General Elliot," &c., are among them, and "the Unicorn and Turf" may have even earlier references in it, perhaps referring to the era before horses were trained for the course, and when the aboriginal British Bucks backed their favourite Unicorn and "hedged" with hips and haws.

Many of the above houses of rest and entertainment are only in villages; but some Yorkshire villages are larger than county-towns elsewhere. We could name many that are quite as large,—for instance, as Flint. "Je mettrais Paris dans mon Gant," said Charles the Fifth, which the Imperial punster might say of Flint, that it might be put in a tinder-box, and that there is not a spark of life about it. The comfortable gaol and the dreary inn are equally silent. The place is unpaved, half the few shops are shut, and the few that remain exhibit half a dozen miscellaneous articles of ancient aspect, and call themselves marts and warehouses. A Yorkshire village would turn up its nose, metaphorically, at such a county-town as Flint,—where there is nothing gay in the silent street but the variegated bills of emigrant ships going or gone to America, and where, perhaps, the street is silent, because the dozen who remain are sorrowing for the score who have sailed away. Flint is the Sleepy Hollow of the British Empire. If a man wakes up therefrom and rushes to Holywell, he only plunges into mediæval superstitions, Winnifred's Well, and miraculous cures, proved by the crutches, sticks, and camp-stools, which have been suspended by ex-cripples above its healing waters. There are no places which present such a singular contrast as any lively Yorkshire district named in this Directory, and the country along the Dee between Flint and Holywell, where, to use the late Mr. John Reeve's illustration, "Nothing has been moving but stagnation," since the Saxon monarch was rowed by six captive sovereigns down the Dee. Indeed, there is nothing now half so lively, except in freights and travellers hurrying by, to or from Chester.—N.B. The acute reader will perceive that our *Athenæum* reviewer has been making a tour of North Wales, with a Yorkshire Directory in his portmanteau.

In Yorkshire, primitive manners have passed away with the last generation of Baronets. It is not a quarter of a century since we heard one of these dignitaries hail another loudly, in an opposite box of the York Theatre, by the familiar rather than endearing name of "Billy." Either of their sons would faint to hear himself so hailed across the pit. The last of the jolly old race, who remembered when men got up at sunrise, and did not lie a-bed till nearly noon, to be in time for the chace, was the late Sir William Ingleby. His Riding used to ring with capital stories of that capital landlord. It was his habit to pay his own bills, periodically, and in person. On one occasion, he repaired to one of the houses with which he dealt, in the neighbouring county-town, for this purpose. The proprietor was a new comer, and did not know Sir William; but hearing him say that he had come to pay Sir William Ingleby's bill, he took the Baronet for the Baronet's butler, and invited him into his parlour. Such a mistake was the greatest joke possible to Sir William, who sat down with his grocer, smoked his tobacco, drank brandy-and-water with him, answered all his questionings as to the comfortable place he had got and the time he had been there, man and boy, and finally took butler's discount upon his own bill,—as no one had a better right to do! It was only when he drew a cheque that the grocer saw his error, and rose to vehemently

apologize. "Sit down, man! sit down!" cried jolly Sir William; "your tobacco is good, and your brandy is better;—let us have some more of each, and part friends." This is an illustration of an *auld lang syne* period,—not long after that when Yorkshire families spent their winters, or fashionable seasons, not in London, but in their county-town. In those days, the three Ridings would not have required a Directory of two thousand pages. Since then, there has been wonderful progress in everything. We may exemplify the progress in population by the case of Bradford. At the commencement of the century that town had about thirteen thousand inhabitants; it now has nearly nine times that number; while even quiet York has more than doubled its amount in the same period.

Finally, with much commendation for all concerned in getting up this useful book of reference, we will conclude by citing the passage which says,—"It is the practice to call a Lady Mayoress of York 'Lady' during her whole life; hence the saying:—

> My lord is my lord for a year and a day;
> But my lady 's my lady for aye and for aye."

We fancy this custom is no longer observed, even in York; certainly, ex-mayoresses of the city are not My-ladyed out of it.

One other error should have been noticed in the *errata*. It occurs in the announcement that "The Right Hon. Henry Earl of Harewood [is] Lord Lieutenant and Custos Rotulorum of the West Riding of the county of York, and Lord Lieutenant of the city of York and county of the same city." That respected nobleman ceased to hold those offices soon after the early sheets of this volume had passed through the press. By his death, from a fall in the hunting-field near Wetherby, in January last, Yorkshire lost one of the most upright and useful men in the county.

Life of Mary, Queen of Scots. In Two Books. By Donald Mac Leod. (New York, Scribner.)

We believe we shall not be suspected of a desire to underrate American Literature if we speak a little plainly on the subject of this American biography. No organ of criticism is more eager than the *Athenæum* to do justice to the genius of America,—as the authors of that country, from Irving and Bancroft to Hawthorne and Longfellow, would at once admit. But the greater our reverence for honest work, honestly done, the greater our repugnance to such work as the Lives of Greely, Bennett, and Mary Queen of Scots.

Mr. Mac Leod gives us a flourish about the "honest labour" bestowed on his work. The adjective is a most unluckly one. He is a mere compiler who has helped himself to everybody else's discoveries, and differs from an original historian as a cockroach does from a bee. We perpetually find solemn references to Tytler, and even to Aytoun's 'Bothwell.' As for his debt to Miss Strickland he shows a grateful wish to repay *her*, for he has promoted her to the rank of a married woman, and calls her "Mrs." Strickland throughout.

Early in the book, we are treated to some "fine" writing. Mary is born, and Mr. Mac Leod thus rants over her cradle:—

> "From the tall *cataract-guttered hills*, where sleeps the eternal snow, white, cold, and silent; from the purple moorland where the bee hums in the summer, and the stately ptarmigan and black cock lurk and brood; from the glen, upon whose side the ten-tined stag feeds with uplifted ears; from the still loch, silver or black, or 'burnished sheet of living gold,' as God's shadow, or sun or moonlight chanced to fall upon it; from the rough river, where golden salmon leap against the rapids; from clusters of larch and fir trees stirred by the northern breeze, came the full sough of pain and joy. Solway is lost, but Scotland hath an heir."

We have marked one remarkable epithet as an innovation in our popular language, though as applied to some people's rhetoric it has its fitness.

Mr. Mac Leod is a Mariolater, and lavishes feeble abuse on everybody who has censured the Scottish Queen. There is a tendency, now-a-days, to canonize the poor woman, and it is quite easy to explain it. The Reformation having fairly established itself, and modern society being firmly based on it, there is something melancholy in contemplating the defeat of those who suffered by attempting to destroy it. It looks generous, too, and as Mary had fine eyes and was a good musical amateur, the subject is picturesque. Nay, we can pardon even a good deal of nonsense in the matter, especially if a man's ancestors followed her banner to Langside. But besides the romantic, there is the ridiculous side to the defence. Many a worthy man who owes it to Knox, Buchanan, the Regent Murray, and Lord Morton, that he is not holding the stirrup of a Cardinal's mule,—whose forefathers, thanks to Mary's enemies, exchanged kail, bannocks and ignorance for a good bit of beef and an education at a grammar-school, now thinks it necessary to make Mary an angel and the Reformers villains because he fancies it *bon ton*. In this fact lies the secret of half the modern sympathy in question. The hue of plush is on the rhetoric of these gentry. They have adopted a melo-dramatic way of looking at history, and only believe in the virtue of those who wear fine clothes and jewels, and pretty little crucifixes set with precious stones.

Now, the biographer before us writes precisely from this point of view. Of the philosophic history of the period he makes no account. He does not seem to know that the question at stake in Scotland in the sixteenth century was whether Mary or the Reformation should triumph, and ignoring this, the root of the business, he spends all his spasmodic energy in fighting about the details. He is shocked by the violent murder of Rizzio, but forgets that Rizzio was a tool of the Pope. He is angry with Knox because he was so great a Reformer that he could afford to dispense with the soft manners of a gentleman-usher. He sentimentalizes about the degrading dependence of the reforming nobles in England; and does not see that it was only by English assistance that the work could be carried out against a majority of those who enjoyed the lands and the following of the country. He would rather believe that the greatest Scotchmen of that age, whose work has determined the condition of modern Scotland, were deeper villains than any in the Newgate Calendar, than he would believe that a young woman of strong passions and brilliant parts, educated in a corrupt court, committed follies and crimes such as passion has often inspired and in some people's eyes even excused. His view is altogether operatic. He is wroth that great historical movements should so interfere with the amusements and comforts of beautiful ladies. The *prima donna* carried off to a prison! It is too violent a play this for Mr. Mac Leod's nerves, and he can scarcely keep from crying over his *libretto*.

Darnley, the "long lad" (as Queen Elizabeth called him), being fairly blown up or strangled, Mr. Mac Leod sees an opportunity of doing a little bit in the Minerva Press style. So he apostrophizes Mary:—

> "And now, poor Queen, pluck from thy bosom the festal flowers, for none shall bloom there again for evermore. Recall the joys of the bridal and the banquet, for the days of thy feasting are over. *Nevermore shall thy light foot bound in the dance, nor thy silver voice ring with laughter.* Nevermore shall thy nobles stand before thee, gorgeously arrayed and full of reverent homage. Nevermore shall the lips of thy young husband be pressed upon thine, nor thy white arms encircle him, nor thy sweet voice murmur in his ears low, earnest tenderness. Thy loves, joy, hopes, honours, are floating off, far off like light clouds before the wind, and when thou sighest, yearning after them, 'when, when will ye return?' their answer sobs back to thee, low and utterly mournful, 'No more, no more for ever.'"

We thought everybody knew that so far from her "light foot" never "bounding in the dance," &c., she was, only a few weeks after her husband's death (in that fatal house to which she certainly by her reconcilement helped to lure him) making merry at Lord Seton's. If we remember right, Lingard himself admits that what she did *after* her husband's death was more suspicious than what she did before. Mr. Mac Leod ignores Mignet's learned Biography altogether, and has certainly never read it, or he would have seen that with regard to this period "les apparences morales et les témoignages écrits s'élèvent à la fois contre Marie Stuart avec une force accablante."

Of course Mr. Mac Leod is ferocious against George Buchanan,—and we dare say George's reputation will survive it. To be sure, he has a suspicious way of always quoting him in a translation, but let that pass. Approach, reader, and hear one of the smallest literary men of the nineteenth century on one of the greatest literary men of the sixteenth:—

> "Gone with his prostituted genius, varied learning, divine gift of poetry, and leaving his name and character behind him. *Covered with wealth and honours, his toil was to impoverish their donor.* Trusted by an almost friendless woman, he was proud of his supereminence in treachery to her. Owing her his life, he devoted all its energies to the destruction of hers. A witness of her dignified purity, he described her as more shameless than the basest prostitute. An elegant scholar, he ransacked the vocabulary of the brothel for language to clothe his calumnies. He sought to be unrivalled in baseness, peerless in falsehood, supreme in ingratitude, and in all he succeeded. An encomiast without sincerity, a religionist without charity, a reformer without principle, a historian without conscience. He had Napoleon's ambition, rendered powerless by a sneaking nature: he had the blood-thirst of a Nero, but paralyzed by cowardice. A traitor, a forger, a false witness, a poltroon, a venal writer, a malignant ingrate. Thus before the eyes of a loathing world shall stand the caitiff George Buchanan, upon a pinnacle of infamy, loftily inaccessible by any other, even the boldest of historical miscreants."

When the reader has recovered from his burst of laughter, we invite him to consider this poor man's facts. Our italics will direct him to the most singular.

"Covered with wealth and honour." George Buchanan lived moderately and died poor.—As to "their donor," let us hear a man who knows the literary history of that period as well as any man alive—Dr. Irving,—though we would stake our pet folio of Buchanan against a copy of Mr. Mac Leod's book that our biographer has never heard of him:—

> "To augment his [Buchanan's] ingenuity, the benefits conferred upon him by the unfortunate Queen have been multiplied with considerable ingenuity. It is certain that she granted him the temporalities of Crossragwell Abbey; and beyond this single point the evidence cannot be extended. Nor was this reward bestowed upon a man who had performed no correspondent services. He had officiated as her classical tutor," &c.—*Lives of Scottish Writers*, vol. i. p. 82.

—Of course he had, and as became a liberal gentlewoman she paid him for it. And what

then? Did that bind him to support everything she chose to do for the future,—after she had fallen in love with the man who took her husband's life? But, quoth Mr. Mac Leod elsewhere,—speaking of a certain charge against Mary by Buchanan,—he is the "only man" who has made such a charge as this. Let us remind him—or, to speak more accurately, let us inform him,—that Joseph Scaliger was in Scotland soon after Rizzio's death, and that he wrote thus of the Queen:—"Elle avoit un beau mari; sed delectabatur turpibus adulteriis." Opinions may vary about the truth of the fact thus quaintly stated, but at least there were men of intellect in that age who believed in it. It was not an invention of Buchanan's, as Mr. Mac Leod asserts.

Perhaps, however, it would be absurd to expect a man to write history who cannot as yet write English. Speaking once of the condition of Scotland, he says,—

"Religiously considered, Scotland was in a very disturbed condition."

Again, of Maitland of Lethington:—

"He had wriggled and *squirmed*, plotted and planned, until both the fox and serpent qualities of his nature were worn out and exhausted."

After his English, take a touch of his humour. He is speaking of the Letters in the Casket:—

"They were taken, it is said, in a gilt box. Now what the material of the box was we do not know, but to judge from its elasticity, it was made either of gutta percha or Maitland's conscience."

But the reader has seen enough, now, to enable him to judge of this writer's intellect, taste, and information. All real partisans of Mary will implore him to abstain from writing in her defence. He is not the man to defend a cause against Hume and Robertson,—to remove the doubts that weighed painfully on the judgment of Sir Walter Scott, and hindered him from writing the life which is here so weakly attempted. It is a difficult, and, to all generous minds, a painful subject. Let us be all the more careful in protecting it from such intruders as the one who has rushed in where Sir Walter feared to tread,—and in doing so, has not hesitated to deface the escutcheons of many of the very greatest men of the sixteenth century.

From Paris to Venice: Crayon Sketches—[*De Paris à Venise, &c.*] By Charles Blanc. (Paris, Hachette & Co.)

M. Blanc, an artist and a critic, is at home among the Italian galleries. With fine perceptions, and a delicate, clear, descriptive style, he is also buoyant and enterprising, and gossips freely in the intervals of pictorial disquisition. English readers will be amused by his notes on English manners, which, if they exhibit on his part little aptitude for national portrait-painting, are at least lively and more adapted to entertain than to offend. Thus, M. Charles Blanc enters the Cathedral of Strasbourg.—

Here one begins to meet English people—"Oh, oh, yes . . . I don't know."

On the Lake of the Four Cantons—

a strong emanation from India rubber waterproofs—warranted inodorous—announces that a very large number of English are present. Each holds in his hand Murray's 'Handbook for Travellers.' * * Murray is the tyrant of English tourists. Not one of them allows himself to experience a sensation unless it be foreseen in the Guide. Murray has set down, beforehand, every impression which it is proper to receive. It is said that every one takes his pleasure where he finds it; the English take theirs where Murray has found it for them! Whatever be the age of an Englishman, or his temperament, or his social position, or his scientific gravity, he will mount the Righi because it is written that he must mount it. * * He travels with a wife caparisoned in impassable furbelows, and flanked by seven children carrying a tea-caddy, a telescope, folding chairs, an atlas of the thirteen Cantons, umbrellas in cases, and tartan wrappers. Standing with their legs apart, they completely encumber the way, and to everything you observe answer good-naturedly, "Oh! no." I fancy this Englishman should call himself Sir Philadelphus Cochrane, or something like it. He is about to ascend the Righi, and doubtless he will expire on the summit in the fourteen arms of his children and his wife. It may be that we are the barbarians. We do not mount the Righi.

From Strasbourg Cathedral—from each of the four towers of which, it is said, a different nation is to be seen—the satirical tourist traversed Switzerland and descended upon white Lugano, with its reflected beauty glistening in Claudian waters. Thence to Milan the Stately, where his artist's eye was better employed than in quizzing his fellow-travellers; but where he found the exterior of the Duomo a grotesque agglomeration of Pagan marble, at once repulsive and puerile, a *Chinoiserie* which would have disgusted Vitruvius and Callicratus. Within he was more amply pleased. Afterwards, passing in review the works of Art in Milan, he writes some charming passages on the artists, and describes 'The Sposalizio' of Raphael as the Aurora of his genius. The next picture noticed is Guercino's 'Agar and Abraham,' and here M. Blanc takes occasion once more to laugh at Englishmen:—"Of course the English are in ecstasies, not because Byron was, but because Murray has spoken, Murray!"

From Milan he took his way to the "wide and grass-grown streets" of Verona,—traversing the ground where the Cimbrians were conquered by Marius,—where Vitellius was defeated by Vespasian,—where Charlemagne hurled his armies into the old theatre of Theodoric's victory,—where Guelphs and Ghibellines were tended,—where Scaliger and the Viscontis ruled,—where the Montagus and Capulets contended,—but where, more than all, Romeo was loved by Juliet. Dante had lived in Verona; but the spirit of the place is Shakspeare's, and M. Blanc has an anecdote purporting to illustrate the power that still holds sway from Juliet's urn.—

I have heard that a young English girl arrived not long ago at Verona, with her governess. She held in her hand a book mysteriously enveloped in a velvet case, and seemed never to part with it. The day after her arrival, she was missed from her chamber. First the hotel was searched, and then all Verona. She had disappeared. * * Doubtless some Italian prince had schemed to carry her off, and had executed his design! The police were set to work; Justice was on her track. Some one thought of asking the governess what was the precious volume which Miss —— always carried with her? A Shakspeare, replied the lady. This revelation was a ray of light in the hotel-keeper's mind. He led the way at once to the Franciscan cemetery—and what was found there?—the young English girl extended at length in the tomb of Juliet, in a white muslin morning robe and satin shoes. Her eyelids were closed, her hands were cold and stiff. Her figure seemed to express a sort of ecstasy. Happily, the romantic maiden was not sleeping her last sleep. At the cry of her governess this new Juliet awoke, and was taken back pale and half-frozen to the Hotel of the Two Towers.

Now, this is a very pretty story, although the Veronese may have invented it as a sarcasm on the countrywomen of Shakspeare. In Mantua, M. Blanc became a Pagan in the hall of Psyche; in Padua he offered homage to Giotto; but it was in Venice that he felt himself truly in Italy. He was fascinated by the gondola interior, "soft as the cradle, secret as the tomb,"—by the majestic palace fronts,—above all, by the glowing galleries. In this spirit did he enter the great Hall of the Council:

I was ashamed to wear a modern coat and a round hat in that immense resplendent hall. One should have worn, I fancied, a robe of brocade, a scarlet simar, or the robes of a magistrate.

With one farewell fling at the English ladies in Venice—with their invariable "*Oh!*"—M. Blanc returns to his gossip on painting and sculpture, and is agreeably voluble to the end.

Sinai, the Hedjaz, and Soudan: Wanderings around the Birth-place of the Prophet, and across the Æthiopian Desert, from Sawakin to Chartum. By James Hamilton. (Bentley.)

We have met with Mr. Hamilton before. He has been our guide through the Cyrenaica, and to the Oasis of Jupiter Ammon. His later wanderings have been also in wildernesses and among the tribes of a primitive people. But his Arabian reminiscences are those which glow most vividly. Sinai is a comparatively commonplace region; there is as much to disgust as to charm in Ethiopia, but the green and gold Arab country, with antique mysteries still shadowing its central plains, might tempt Alciphron himself into the Desert, to eat dates and drink milk, to pluck wild olives amid clematis clusters, and to enjoy a hospitality which, to the donors, is more a pleasure than a virtue. You may gain new impressions by watching black wantons dancing on the shores of the White Nile, or sojourning in elephant forests, or eating serpent flesh in Soudan, or sipping the wine of Crete and copying the blue roofs studded with gold stars of the Sinaitic convent; but to breathe the balm of patriarchal life, fresh from the pastoral age, you must live in the Arabian tent, loiter among the palm-groves reddened by sunrise, and see the lithe shepherds of the oases tending their flocks of lambs. Nor is this yet among those "sweets grown common" which Spenser says soon "lose their dear delight," for "the interior of Arabia has never been explored; from the natives I learned that it contains large tracts of fertile and thickly inhabited territory." Any amount of *ennui* would sink into those sands like the drops of an April shower or a warm autumn dew.

Mr. Hamilton, three years ago, undertook a tour through the countries bordering the Red Sea. Early in the course of his journeys, he met certain pilgrims from Lahore, several men and an old woman, with a laden donkey; they had travelled to Mecca by way of Bushire, had visited Cairo from mere curiosity, and were then returning homewards *viâ* Bagdad. And yet those Taverniers have published no history of their wanderings, as some civilized people do whenever they have ventured beyond Holyhead or the Nore. To Sinai was, with Mr. Hamilton, a mere dromedary ride: he saw the convent, ascended the Mount, paid the bill, and went down into the Red Sea,—blue water, purple sky, a wailing storm, a howling passenger, and a tramping crew, succeeded by a calm among the corals, which lent to the waters their ruby or emerald shadows. Mr. Hamilton collected on his tablets a variety of orange, red, blue, green, and amethystine tints, coming and going in the firmament that colours the Erythræan Sea; but he despairs of finishing the picture, and so forbears from dipping his pencil. At Jidda he noticed the slave-market, to which young Abyssinian girls are brought, having first been landed by night, and taken to the houses of certain women, who bathe, beautify, dress, and prepare them for exposure in the bazaar. He saw also the Tomb of Eve, which lady was sixty feet in height without her shoes, and very peculiarly formed. Then, after a not uninter-

esting digression on Mohammedanism, Mr. Hamilton strikes into the Desert, and stands face to face with an Arabian gentleman, whose pedigree might put all feudalists to shame.—

"A very dark complexion, as far removed from the negro swarthiness as from the bright Caucasian hue, to which the red blood coursing under the thin transparent skin gave a wonderful vivacity, finely chiselled features, regular teeth of dazzling whiteness, jet-black pointed beard and moustaches, large lustrous swimming eyes, in which many a fair lady would love to see her image reflected—all gave to his head a rare distinction. His fresh youthful voice, slim form, the delicacy of his hands and feet, his quiet, elastic step, like that of a racer, all bore witness to the purity of his descent. * * The picturesqueness of his costume matched the beauty of his person. Over a white caftan he wore a loose cherry-coloured jubba; round his waist a cashmere shawl, in which was stuck, crossways, a large, silver-sheathed, curved poniard, called the jambiah; over his shoulder a sabre was slung by silken cords. His head was covered by the yellow and red kufiah, which hung down behind, and was fastened to his head by a wide white muslin turban, over the sides of which the ends of the kufiah were thrown up. His feet were bare; his sandals, like those of a Roman statue, being left at the edge of the carpet."

A grand show of dromedaries, with silk, gold, and feather mountings, variegated saddle-bags of goats'-hair, brilliant tassels, and ostrich-plumes, accompanied Mr. Hamilton out of the Mecca gate of Jidda, one rich February evening. He soon arrived at points whence the life of the Desert could be observed in all its graceful simplicity.—

"We came upon large flocks of sheep, and herds of a small and well-made kine, distinguished by a high flexible hump on the neck. They were tended by young men, models for the painter of Scripture pastoral scenes, who wore a short cloth, fastened round the waist by a long leather cord; a belt over the shoulder adorned with little plates of brass, to which were suspended the powder flask and several small pouches. Thin long raven locks hung in curly plaits over their shoulders and neck, a few wore a dark cloth thrown over the head, and all had sandals. Their general complexion, the result of constant exposure to the sun, is a dark brown; their eyes are piercingly bright but not large. Their regular but rather angular features, their slim limbs, all formed for action, joined to their independent bearing, correspond with all that one has read or dreamed of the free sons of the Desert. Each carried in his hand a small lance, having a stem about three feet long, terminating in a spike at one end, at the other in a blade, wrought, like the spike in iron, and covered with a variety of patterns, inlaid in brass. In addition to this, many bore a matchlock; and most of them had the silver-sheathed poniard stuck across the waist."

On the hills of Karah flourish acacias, wild olives, and figs, and various flowers; beyond them is Tayf, where the Sherif has a palace, and where the travellers were banqueted, according to a custom older than Alraschid, upon a lamb stuffed with raisins and pistachios, sweet cream, sour milk, salad, olives, and rice, followed by coffee. But we are impatient to quit the "purple-lined palaces," even of Sheikhs; and besides the dromedaries are waiting at the gate.—

"At a gentle amble, its long neck stretched out in front till the head nearly touches the ground, the dromedary carries his rider almost without perceptible movement, and at a rate of more than five miles an hour. He can cover twice as much ground in this time without any great exertion to itself, but the motion then becomes unpleasant, at least for young riders. He carries one more agreeably than a carriage, for one enjoys, elevated on his hump, the feeling of liberty which even the driver who must follow a beaten road has not in a carriage, as well as the free air and the commanding view. He is in the long run less fatiguing to ride than the horse, for on his wide saddle, one can change at pleasure the position of one's limbs. The usual way of riding is with one leg crossed over the pummel, the other hanging loosely or hooked to the cross foot. Thus you can ride all on one side as in a lady's Spanish saddle, or with both legs crossed in front, or hanging down as on horseback. The last is certainly the safest mode, as then the equilibrium is perfect, and one gains a sort of grip; but the more comfortable position is with one or both legs crossed in front."

Among the beautiful forms of welcome preserved in the Desert is that of showering handfuls of lemon blossoms over the newly-arrived guest; but—

"kindness is sometimes killing, and Arab ideas of hospitality may be ranked in the category. The sheep must be killed and served to the guest, and the gist of the compliment would be lost if it were killed before his arrival; thus half our night was lost in repose, thanks to the well-intentioned but inconvenient etiquette of our entertainers."

We have an abundance of pleasant notes on the manners of this grateful wilderness.—

"The Arab, his country, and his camel are in wonderful harmony with each other. Without the camel, the deserts which contain so many tribes of freemen would be uninhabitable, and one can imagine the camel without the Arab as little as the Arab without the camel. Its large soft eye looks from under its long eyelashes at its master, with an expression of recognition which one can hardly doubt is affection. He talks to it and it seems to understand him; he sings and it quickens its steps, reviving from the fatigues of the way. The genuine Arab never beats his camel, he guides it with his voice, or with a light wand touching one ear or the other to make it turn to the right or the left, or gently tapping it on the crown of the head which it instantly lowers, and breaks into an amble; or if he wishes it to go still quicker, he presses its shoulder with his bare heel."

The next journey undertaken by Mr. Hamilton was from Sawakin, on the Red Sea, to Chartum, at the confluence of the Blue and White Niles. There is less originality in this portion of the narrative, but the whole is entertaining as the work of an acute and well-informed traveller. Instead of dates and milk, he ate gazelle cutlets and guinea-fowls; and instead of Scriptural shepherds he saw Ethiopians by no means so "blameless" as those among whom the rebellious Vulcan fell.—

"The dancers were black slave-girls, under the conduct of a celebrated black beauty, named, I presume characteristically, Fatibarah, (fatat-el-'ibarah), 'she has exceeded bounds.' This lady's costume, particularly the head-dress, was most curious. The hair was drawn from the forehead to the back of the head in six hard rolls, three on each side, leaving the temples and ears entirely exposed, and gathered behind into a thick projecting mop of corkscrew curls, forming two sharply defined tiers so strongly gummed that they offered to the hand the resistance of a horse-hair cushion. This mop is cut square at the neck, and in every particular resembles the head-dresses delineated in the old tombs of Egypt. The crutch-like wooden support for the head, which is frequently found there, is still used in Abyssinia instead of a pillow, and with such an elaborate head-dress is absolutely necessary. Its thousand curls are only arranged once a month. A plate of gold, beautifully embossed, covered the roots of the hair above the forehead, and from this hung a number of triangles attached with chains, of the same metal. A nose-ring, on which were strung pearls and rubies, was passed through the right nostril, necklaces, bracelets of rhinoceros-horn and gold, anklets of ivory, completed, I believe, the ornamental part of her toilette. As she was enveloped in a very long half-transparent muslin scarf, wound round the body in a thousand folds, it was not easy to make an exact inventory of her costume, though I was told it was simple enough."

Mr. Hamilton's volume is fresh, pictorial, and informing.

China: a Popular History. By Sir Oscar Oliphant, Knt. (Hope.)

What *is* a popular history of China? If it be a collection of odds and ends culled from the writer knows not what quarter, and put together he cares not how, without the slightest attempt at graces of composition, but flavoured with bad puns, insipid jokes, and a large amount of flippancy,—then Sir Oscar Oliphant has written a Popular History of China, and we herewith hand it to the reader. To our mind it is neither an easy task nor one of little importance to write a popular history. If the millions will indeed accept, and read a book, how great is the responsibility of writing for them! If, for example, the volume before us could really make its way to every English fireside, would it be a light matter that its crudities should obtain so wide an acceptance? In this case, certainly, the dullness of the author cancels the danger, but we protest against popular histories by writers who have no knowledge of the language, habits, and history of the people they describe,—save what they have gleaned in the most careless and undiscriminating manner from others. We shall justify our criticism by a few specimens of the style of this "popular" historian, and in mercy to the reader they shall be short.

Sir Oscar at starting presents civilization to our astonished eyes under the image of two peas. Hear what becomes of them:—

"The golden pea of civilization was bottled up, and never allowed an opportunity of extending its benefits beyond the period of its own maturity. There it is, securely treasured in China to the present day, as large as when it was first secured, and no larger. The golden pea which dropped into the lap of Europe has, on the contrary, not only been scrupulously preserved, but propagated, and there it is now, ready to shame its elder brother into emulation, or to share its fructifying qualities with the utmost generosity."

In the deep gloom of ancient Chinese history, Sir Oscar is much comforted by "one Shuckford," who, we are told, wrote a book called 'The Connection of Sacred and Profane History.' We almost think we have seen the book; but we certainly recognize Haydn's 'Dictionary of Dates,' Sir Oscar's other authority, relying upon whom Sir Oscar is "given to believe" that the Chinese were "acute astronomers" a few years before the Deluge. In spite of these supports, Sir Oscar soon grows tired of "wading through old times and musty records," as he now ungratefully calls the writings of his two friends,—so he makes short work of it and finishes off 3,900 years in four pages. This brings him to the Mantchous, who, we find, are, after all, only shareholders in the great Bank of China:—"The victorious Timour has not all in China to cherish the perpetuated 'glories' of the splendid horse-tamer. To the present day, many mountaineers deny, by practice, that they have 'caught a Tartar.'"

Our author would describe the Chinese military system. The following extract will show how profoundly he has studied the subject:—"An illustrated paper—we do not now remember whether the *Times* or the *News*, nor do we know upon what particular authority—gives an account of the Chinese implements of war." Shortly after, we come to the matter of religion, of which Sir Oscar makes a complete Chinese puzzle. He says, "Of their three religions, Buddhism is derived from India, and Confucianism and Taouism are of comparatively recent birth." Presently after we are told, "Confucius is supposed to have been born about 550 B.C.;" and a few lines lower down it is added:—"It was about 65 A.D. that, in accordance with a pro-

phecy of Confucius, ambassadors went to India and brought back the writings of Buddh." Will Sir Oscar explain his chronology?

Travels in the Free States of Central America: Nicaragua, Honduras, and San Salvador. By Dr. Carl Scherzer. 2 vols. (Longman & Co.)

THIS is a work which will satisfy all who love lively detail of tropical effects and marvels, and are not averse to touches of human romance and scientific adventure. Nowhere are there such facilities for satisfying the conditions of extravaganza as in Central America. Nowhere are to be found so much unguaranteed character, such strange floral and animal irregularities, such social and political insecurity, or such complete arguments against positive philosophy. Nowhere is the scenery so picturesque, are earthquakes so active, the ophidia so malign, or man so villanous. The isthmus is proverbially neither a safe nor a moral locality; and the isthmus of the New World more than supports the doubtful fame of the Old one. The prevalent type of physiognomy, according to Dr. Carl Scherzer,—whose name is yet no guarantee against banter,—is such as to encourage no traveller who has money and is not a predestinarian, to sleep lightly or carol gaily along the passage. To every man it does not happen to write, still less to publish, a report upon Nicaragua. The scum of two hemispheres drifting northward or southward, at the rate of 10,000 passengers a month, stained with every white, yellow, brown, olive, Swiss, Texan, Irish, French, and Mongolian variety, creates a confusion of morals and an indiscriminateness of expression by no means favourable to the bodily comfort or the mental serenity of a well-disposed European observer. Our author and his companion, Dr. Moritz Wagner,—to whom we owe the scientific details, the botanical notes, and a lively account of an earthquake, depicted in these volumes,—appear to have passed through the Alsatia of the New World, if not without scath or peril, in a manner highly creditable to their ability, their temper, and their reputation. They were not signally unfortunate, and they utter no loud lament over their eating and drinking. They were not poisoned in their cups, nor stripped during their sleep. They suffered nothing from "half-naked, unpleasant-looking fellows, with gleaming weapons without a sheath," for they avoided conversation, and kept their eye on their pistols. The sharp practice of General Walker, to whom they are rather favourable, did not incommode them; and they were not decoyed to their harm by dalliance with dusky Judiths.

The narrative begins at Bahia de la Virgen, or Virgin Bay, a picturesque little improvised town of pantiles and palm-leaves on the south-western shores of the Nicaraguan lake. There the lake spreads for a hundred miles, with lofty volcanic islands, its shell-less shores, its decayed and burnt-out towns, its magnificent woods, bright with marvellous birds and flowers. The haciendas, or farms, are fenced round with colonnades of cactus: there are the milk-tree, with its blue round fruit, the peculiarly cheap butter-tree, the coffee-tree, with its berries embedded in jelly, the crowned and imperial papaya, and the cocoa-palm, whose boles serve the Indian boys as gymnastic poles. Orange-trees are as tall as limes, and single trees yield a harvest of above 10,000 oranges; while the fruit of the mango, the pine-apple, and the banana drops and rots on the ground. Among a crowd of blue, crimson, and green macaws, we note the yellow-tailed hontemma bird, whose voice is like the creaking of a bough, and a lustrous little ruby-throated humming-bird, that flutters among water-lilies, and now and then poises himself on the back of a black sleeping alligator.

We pass to an account of the earthquake, on the Easter of 1854, at San Salvador, which, owing to the frequency of "*temblores*," is called in the language of the country "the swinging mat."—

"The morning of Easter Sunday was announced as usual by the firing off of rockets, and a joyous burst of military music. The multitude betook themselves in festival procession to the cathedral, to witness the celebration of high mass; the houses were gaily adorned with branches of palm and banana leaves, and the '*Sanctissimum*' was borne in triumph through the streets, followed by crowds of señors and señoritas in their gayest attire. In the afternoon took place, according to custom, the ceremony called the 'Promenade of the Saints,' in which the colossal wooden carved images of these holy personages are taken from the churches, dressed in new and costly robes, and paraded through the streets. Wherever two of these saints meet, they are made to stop and mutually embrace, and the attendant throng salutes the spectacle with endless shouts, and the discharge of hundreds of rockets. On this Easter Day, as on preceding ones, the people, after having performed their devotions like good Catholics, gave themselves up to festivity and enjoyment, and the day closed with music, feasting, and fireworks. Immediately after nine o'clock, however, a shock occurred more violent than the strongest felt on the Good Friday. I was unwell with a slight feverish attack, and had gone to bed, but was awakened by the noise. Some walls fell in, many houses were rent, and a part of the ceiling of my room fell, striking me on the head and face, and for some minutes blinding me with the dust. I sprang from my bed and groped my way to the door, which unluckily I had locked; but after a time I succeeded in getting it open, and made my way to the courtyard, where I found the rest of the inhabitants of the house praying and screaming. After a few moments had elapsed, however, they had quite got over their fright, and were joking and laughing at their previous consternation and precipitate flight. Unless the houses actually fall, people do not, after the first moment, think much of these shocks, but this time they did take the precaution to put all their doors open, and had their beds carried out into the court. Mine was placed under the gallery of the corridor, and a great deal of compassion was expressed for me when they found I had been a little hurt. A young doctor, who occupied the room next to mine, thought there would be no strong 'temblor' again to-night, but an aged priest said that this house was old and decayed, and it was very necessary to be careful. My housemates then went back into their rooms, and, though they kept the doors open, consumed with a good appetite the remainder of the Easter feast, the conversation the while turning, of course, almost exclusively upon the 'temblor.' I lay gazing up into the night sky, not feeling at all inclined to sleep. The day had been, as usual, very warm, the thermometer at noon showing 88° Fahr.; a heavy mass of clouds (*Strato-Cumulus*) lay piled up about the waning moon, but dispersed towards ten o'clock, and the moon then shone brightly through a clear and tranquil atmosphere. A few light scattered clouds of the *Cirrus* and *Cirro-Stratus* lay motionless at a few points on the horizon, but there was nothing to portend any unusual phenomenon. At thirty minutes past ten, however, came the shock that laid the city of San Salvador in ruins. It began with a terrific noise, the earth heaving as if lifted by a subterranean sea; and this movement, and the thunder accompanying it, continued for ten or twelve seconds, while the crash and uproar of falling buildings were still more deafening than the thunder. An immense and blinding cloud of dust arose, through which were heard the shrieks and supplications of the flying people, calling on 'Maria Santissima' and all other saints; and at length a hymn, in thousand-voiced chorus, which was heard plainly, through all the other noises, at the distance of a mile and a half from the town, by a family of German emigrants with whom I was acquainted. I had witnessed many terrible scenes of war and revolution in the Old World, but there at least they were visible enemies of flesh and blood with whom people had to contend; but here were unknown, terrific, incalculable powers at work, of whose nature they had only the vaguest idea. The shocks went on, sometimes stronger, sometimes weaker, and with very brief intervals, until, by the evening of Easter Monday, 120 had been counted, and they were accompanied all the time by hollow thunder and detonations, as if a tremendous battle were raging beneath the earth. People now abandoned all thoughts of their property, and sought only to save their lives, for, with the continual oscillations of the ground in all directions, rents and chasms were opening on it, so that no one knew whether it might not the next moment yawn beneath their feet and engulf every living soul. After every new shock I noticed that the people changed their prayers and the names of the saints they were invoking; but whether the saints did not hear, or could not or would not help them, the subterranean artillery continued to bellow forth its fearful salvos with unmitigated fury. Towards one o'clock in the morning, one of my acquaintances came climbing over the ruined wall of our court-yard to inquire after me, as he knew I was unwell; and he then proposed to me to take a walk through the town by moonlight. We took the direction of the market-place, where the cathedral stood; and, from what I saw, I can truly say that the whole city was destroyed, for I did not see a *single* house uninjured. Those that were not lying in ruins had so many rents, and damages of various kinds, as to be quite uninhabitable. The cathedral—an elegant, rather than imposing building—had escaped with less damage than many other churches; but the clock-tower had fallen, the portal was lying in fragments, and the walls were gaping open in two or three places. The interior of the Franciscan convent, the door of which stood wide open, presented a sad picture of desolation. So many stones had fallen from the roof, and such large portions of the walls, that most of the altars lay scattered in fragments, or were covered with rubbish; several of the colossal figures of saints had fallen from the niches, and lay with their finery all covered with dust and stones; but the people, who the day before had been bearing them about in triumph, now did not trouble themselves any more about them: everybody was occupied in saving his life, or, if possible, his most valuable possessions. Of the new University buildings, only one wing was left standing: it was the one containing the clock-tower, and in this the clock was still going on, regularly striking the hours. The roof of the episcopal palace had fallen in, and some stones had struck the sacred head of the bishop with no more ceremony than had been shown towards our profane pates, though this bishop was Don Tomaso Saldana, a man most justly held in high repute for the excellence of his life. Much injury had also been sustained by the President of the Republic, Señor Duenas, who was originally a monk, but afterwards a lawyer and a statesman, and perhaps the man of the greatest capacity in the whole country. The streets were empty and desolate, and we had to scramble over heaps of ruins to get through them: not a creature was to be seen but a few sentinels, and in the interior of the houses also there reigned the stillness of the grave. Even in the broadest streets the people did not think themselves safe, and rich and poor were huddled together indiscriminately in the great square, praying, singing, and screaming whenever a new shock startled them with its terrible explosion; but fortunately, in the midst of all this, the new President, Don José Maria San Martin, showed much presence of mind, and gave his orders for the preservation of property with much composure."

This is undoubtedly the best work on Central America since the appearance of Mr. Squier's lively volumes.

NEW NOVELS.

Orange Blossoms: a Gift Book for all who have worn, are wearing, or are likely to wear them. Edited by J. S. Athur. (Knight & Son.)—This little book is a reprint of American stories. In the midst of much affectation and watery sentiment, there is occasionally a grain of sensible practical counsel. The counsel is, however, chiefly for the husband's ear. It is intended that readers of the sterner sex should "pause and think" upon the fatal consequences of marital ill tempers. The wives are treated very gently, like suffering angels, whom a harsh word may easily drive to death or distraction; indeed, several of the stories are made to turn entirely on this. It is seldom wives meet with so sympathizing a champion as the editor of 'Orange Blossoms.' We would recommend wives to try the effect of these sugar-almond stories on refractory husbands, and should like to know the result where brought into real life.

Abbey Lands: a Tale. By William Smyth Rockstro. (Masters.)—This is a tale on the principles of the High Anglo-Catholic school, to show that the crime of sacrilege is incurred by all those who persist in keeping possession of any property that has ever belonged to the church. The penalties are, that the holders of such "abbey lands" lay themselves open to mysterious and unknown judgments, and to the more intelligible punishment of the constant failure to transmit the property in a direct line—family feuds, paternal enmity, and a general run of unblessed luck. The tale is addressed to Protestant consciences; but we fear that both the tale and the arguments are too watery to take much hold on the strong points of possession. "Bell, book, and candle" have always been notoriously weak to drive away plunderers, and metaphysical points of conscience which involve restitution of property, will not make much way with landlords of orthodox Protestant notions about Church and State. Our duty is, however, with the tale as a work of fiction: it is a mild, weak story, flowing along with gentle dullness; all the virtues are incarnated in High Churchmen, lay and clerical. The Dissenters are all vulgar, and their standard of morals is even below that of their manners. The most edifying characters are three boys of equal degrees of excellence, and whose profound views about "baptism," and the sin of taking away church property at the Reformation, would be as wonderful, in real life, as the flowing diction in which they utter their opinions is astonishing to the reader. Far be it from us to pass judgment on such youthful sages; only, for the interest of all future story-books, we hope never to meet with the like of them again.

Quits! a Novel. By the Baroness Tautphœus. 3 vols. (Bentley.)—'Quits!' is a well-written novel, not without talent—there are excellent descriptions of Tyrolean life and scenery; but the whole story is heavy and long-winded, the interest so diffused, and the characters so scattered, that the most ardent novel reader would find himself amid their "mazy wanderings lost." The first set of characters with whom the reader has to make acquaintance all die off in the course of the first volume, and the two other volumes are constructed out of the remains of their "life and errors." The result is not lively. Many a writer with one half of the ability possessed by the Baroness Tautphœus has produced a novel twenty times more amusing.

Emeline Latimer: a Novel. 3 vols. (Newby.)—This is a mild, easy-going story, made of the good old-fashioned materials which delighted the hearts of our grandmothers when they indulged in reading novels. There is a suppressed Will,—a manœuvring wife lording it over a timid vacillating husband, a Macbeth without the murder,—an angelic family deprived of their inheritance,—a sister who, to save her brother from ruin, consents to "marry a man she loathes, &c.," and to break the heart of one she loves,—and then, of course, in the third volume, the suppressed Will is found, the wrong made right, and Virtue triumphs according to all the stage directions made and provided for such occasions. There is, however, a most unnecessary murder and suicide, which do not even produce the horror of a catastrophe, so very gently and flatly do they fall. The style is as tepid as the interest.

Labour and Live: a Story. By the Author of 'Blenheim.' (Freeman.)—'Labour and Live' is an excellent story with an excellent purpose; it leaves a cheerful, pleasant, bracing influence on the reader. The style is much pleasanter than in the author's former story of 'Blenheim'; and Bertha is a great improvement on Clara. The character of Miss Molesworth is well imagined, and her story, shadowy and incomplete as it is left, has a touching interest. The tale is not a novel, the interest is throughout kept subordinate to the intention, but it is, nevertheless, to be read with pleasure. "Mr. Norton's reading" may possibly be skipped at the first time of going through the book, for few readers like to be interrupted in a story; but it will be read and appreciated afterwards for its sound good sense and good feeling.

OUR LIBRARY TABLE.

Washington in Domestic Life, from Original Letters and Manuscripts. By Richard Rush. (Philadelphia, Lippincott & Co.; London, Trübner & Co.)—Mr. Rush has read some thirty letters from Washington to his private secretary, Col. Tobias Lear. In this volume he has simply stated their contents, allowing little of the original freshness and flow of simplicity to appear. We cannot understand why he abstains from publishing them entire; but even in a state of dry condensation they have their value as opening glimpses in the biography of Washington after he became President. Readers of Mr. Irving's 'Life' will be glad to take up the narrative, though in a broken form, beyond the point at which the graceful writer has for the present left it. The letters exhibit Washington almost exclusively in the character of an unostentatious citizen, busying himself with his family affairs, his house, garden, carriage, even the lustre in his drawing-room, and the mangle in his kitchen. "Whether the green curtain or a new yellow one is to be used for the staircase window in the hall," is a point for important discussion. He prefers a "plain and elegant" carriage to one that is "rich and elegant." But we have now and then a glimpse of him as he lived in private with public responsibilities weighing heavily upon his heart. Col. Lear describes his reception of the news that St. Clair, in 1791, had been defeated. Mr. Rush preserves in the following fashion the record of a scene that ensued:—"The General now walked backward and forward slowly for some minutes without speaking. Then he sat down on a sofa by the fire, telling Mr. Lear to sit down. To this moment there had been no change in his manner since his interruption at table. Mr. Lear now perceived emotion. This rising in him, he broke out suddenly, 'It's all over—St. Clair's defeated—routed;—the officers nearly all killed, the men by wholesale; the route complete—too shocking to think of—and a surprise into the bargain!' He uttered all this with great vehemence. Then he paused, got up from the sofa and walked about the room several times, agitated, but saying nothing. Near the door he stopped short and stood still a few seconds, when his wrath became terrible. 'Yes,' he burst forth, '*here* on this very spot, I took leave of him; I wished him success and honour; you have your instructions, I said, from the Secretary of War, I had a strict eye to them, and will add but one word —*beware of a surprise*. I repeat it, BEWARE OF A SURPRISE—you know how the Indians fight us. He went off with that as my last solemn warning thrown into his ears. And yet!! to suffer that army to be cut to pieces, hack'd, butcher'd, tomahawk'd, by a surprise—the very thing I guarded him against!! O God, O God, he's worse than a murderer! how can he answer it to his country?—the blood of the slain is upon him—the curse of widows and orphans—the curse of Heaven!'" George Washington, therefore, regarded those who by wanton neglect sacrificed an army as "worse than murderers"; but he afterwards did ample justice to the brave and unfortunate St. Clair. As for the volume published by Mr. Rush, it is particularly interesting, although we could have desired to receive the materials in their more attractive originality.

The Story of Rushen Castle and Rushen Abbey, in the Isle of Man. By the Rev. J. G. Cumming. (Bell & Daldy.)—*The Runic and other Monumental Remains of the Isle of Man.* By the Rev. J. G. Cumming. (Bell & Daldy.)—Mr. Cumming is an agreeable and discreet writer. He recognizes the fact that the Isle of Man is not one of the great States of Europe—that the Tynwald Hill is inferior in historical interest to the Acropolis of Athens, and that Magnus Bare-legs (the Highlander) was a less illustrious person than Julius Cæsar. This discretion (rare, indeed, in a local historian) saves us from those lengthy reports of parish and other feasts, and of the deaths of people who lived to the age of 150 or thereabouts, which make the boldest man shudder on opening a local history. But discretion is not the author's only virtue. The little volume that is first mentioned by us gives an admirable sketch of the history of Rushen and its inhabitants, and in so doing, of the Isle of Man itself—a history full of interest to the antiquary, and by a judicious admixture of anecdote and Manx traditions, here rendered amusing. The volume on the Runic and other monuments contains illustrations of the numerous Scandinavian crosses in the Isle of Man, and their inscriptions, with the author's interpretation. The variances between the Old Manx, the New Manx, and the ordinary Runes, are set forth in a tabular form. The author has thought it necessary to apologize for the roughness and want of finish of his illustrations. They, are, however, bold and distinct, and we think the apology unnecessary.

The Militiaman at Home and Abroad; being the History of a Militia Regiment. By Emeritus. With Illustrations by John Leech. (Smith & Co.)—In this volume, the forms of romance are associated with the materials of reality. The narrative—quietly, but humorously written—has been racily illustrated by the pencil of Mr. Leech. It depicts, lightly and gaily, every step in the progress of a militia force, from its first training to its disembodiment, including its fraternal connexion with the line, and thus serves to show from what substance, operated upon by English discipline, an army may be created. The recruiting, the mustering, the drill in squads, companies and battalions, the early musket practice, suggest scenes which are felicitously hit off by Emeritus, who occasionally takes up the tablets of travel and paints a group or a landscape in the Grecian isles. He meets, on a slope of the Black Mountain, in Corfu, the face and figure of the ideal Sappho, and hopes, with a shilling, to extort a smile from her tragic lips; but her beautiful severity relaxed not, although she gave him a flower before disappearing like a dream of May-day in antique Athens. The regiment was first quartered in Corfu, and then in Zante, where the Dulminster levies lounged in perfumed pomegranate and oleander shades, and compared the City of the Yellow Rose to their own familiar Dover. Next, they "swallowed the sun" at Gibraltar, and, finally, they were shipped home, to sound their bugles in Portsea and disband, carrying a thousand reminiscences to a thousand cottage homes. Those who have a sympathy for the quieter varieties of military life will relish the hour of genial reading which this volume offers.

Pamphlets on the Suez Canal scheme still continue to appear. *Lord Palmerston and the Suez Canal.* Two Letters. By Mr. D. A. Lange. *Inquiry into the Opinions of the Commercial Classes of Great Britain,* by F. de Lesseps; and *A Letter to Lord Palmerston,* by an Old Indian. Other commercial topics are treated in *The Authorised Report of the Mercantile Law Conference, 1857,* edited by G. A. Hastings; *Liability of Parties depositing Money "at Call,"* a Letter, by F. W. Stevens; McPhin's *True Principles of Currency;* and some interesting *Notes on the Government Security Savings Bank Bill,* by Mr. Donald Bain, "a Scottish Accountant." *Meat, Drink, and Wheat,* is the title of an elementary treatise on the chemistry of farming, by Mr. Thomas Dyke Acland, who also reviews the questions at issue between Mr. Lawes and Baron Liebig. Dr. Voelcker, in *Agricultural Chemistry,* treats similar subjects in a somewhat different style; while a second edition of *Canada, the Land of Hope,* beckons the reader away from exhausted Old World soils, and points to the virgin fields of the American continent.

Special classes may be interested in Mr. James Duberly's *Remarks upon the Present System of the Appointment of High Sheriffs*, and Mr. J. S. Gawger's *Medical Reform a Social Question*; while to various sorts of readers may be recommended Mr. Mathew B. Hale's pamphlet on *The Transportation Question*, and an interesting tract—*Metropolitan Workhouses and their Inmates*, published by Messrs. Longman. Major-General Lewis has issued an elaborate essay *On the Defence of London, on Fortification, and on the Defensive Resources of England*, reprinted from the professional volumes of the Royal Engineers; Mr. John Postgate, *A Few Words on Adulteration*; an anonymous translator *A Visit to Schamyl*, from the German; and Mr. Struve Ærnest *The Comet and Cometic Electricity.—Recollections of Western Texas* is a scrap account of a wild adventure in a wild country, "by two of the U.S. Mounted Rifles." *College Years*, a valedictory address, abounding in florid verbiage, delivered to the Dialectic Society of Edinburgh; and *Burning the Dead on their Sepulture*, a suggestive treatise, "by a Member of the Royal College of Surgeons."

LIST OF NEW BOOKS.

Adams's Cyclopædia of Female Biography, fc. 8vo. 6s. 6d. cl.
Ainsworth's Rookwood, illust. 8vo. 5s. cl.
Animal & Vegetable Substances used in Arts & Manufactures, 2s.
Askew's Voyage to Australia and New Zealand, 12mo. 4s. 6d. cl.
Ayres's Register of British and Foreign Funds for 1857, 16s. cl.
Bengel's Gnomon of the New Testament, trans. with Notes, edited by Fausset, Vols. 1 and 3, 8vo. 8s. 6d. each vol. cl.
Bezant's Geographical Questions, new ed. by Stafford, 1s.; Key, 2s.
Black's Picturesque Guide to North Wales, fc. 8vo. 3s. 6d. cl.
Bristol Magazine, No. I. royal 8vo. 1s. swd.
Campbell's Lives of the Lord Chancellors, Vol. 9, cr. 8vo. 6s. cl.
Chambers's Minor Atlas, 4to. 5s. cl. swd.
De Porquet's First German Reading Book, 5th edit. 12mo. 3s. 6d.
Erredge's Student's Handb. of Gen. Information, 2ed. by Quested, 3s.
Geisler's First Book of German Poetry, 16mo. 2s. 6d. cl.
Hardcastle's Catechism of Astronomy & Use of Globes, 3rd ed. 2s.
Heyse's Four Phases of Love, trans. by Kingsley, fc. 8vo. 1s. cl.
Livius, Historia, Third Decade, Pt. 1. Notes by Humphreys, 8s.6d.
Martin's British India, its History, &c. imp. 8vo. 21s. cl.
O'Gorman's Self-Instructing Bookkeeping, new edit. 8vo. 5s. cl.
Paget's Christian's Day, 4th edit. 32mo. 2s. 6d. cl.
Pratt's Law of Highways, 8th edit. by Archbold, 12mo. 6s. bds.
Railway Library, 'Maxwell's Adventures of Capt. Blake,' 2s. bds.
Reason Why, new edit. cr. 8vo. 2s. 6d. cl.
Thorp's Broken Wreath and Crown of Spring Flowers, 2s. cl.

American Importations

Armstrong's Doctrine of Baptism, 12mo. post 8vo. 7s.
Bishop's Floral Homes; or, First Years in Minnesota, illust. 6s. cl.
Brewer's North American Oölogy, Part 1, 4to. 5s.
Browne's Treatise on Construction of the Statute of Frauds, 25s.
Child's (A.) History of Greece, illust. 2 vols. fc. 8vo. 7s.
Comings's Class-book of Physiology, 12mo. 7s. half-bound.
Gross's Elements of Pathological Anatomy, 3rd edit. 8vo. 28s.
Hitchcock's Illustrations of Surface Geology, 4to. plates, 12s.
Kiana, a Tradition of Hawaii, plates, 7s. 6d.
Kidder and Fletcher's Brazil and the Brazilians, plates, 8vo. 21s.
Lee and Warren's Effects of Climate on Tuberculous Disease, 6s.
Miller (Hugh), Notice of some Remarks by, 1s. cl.
Noti's (President) Lectures on Temperance, post 8vo. 7s.
Read's (T. B.) New Pastoral, new edit. 16mo. 5s. cl.
Reports of Explorations and Surveys for a Railroad from the Mississippi to the Pacific Ocean, Vol. 2, 4to. 42s. cl.
Smithsonian Institution Annual Report, royal 8vo. 6s. cl.
St. Paul's Epistles to the Thessalonians, trans. with Notes, 4s. 6d.
Swan's North-West Coast, illust. post 8vo. 8s. 6d.
Tariffs of Rates of Duties, U.S., 1857, 8vo. 7s. 6d. cl.

FOREIGN CORRESPONDENCE.

Florence, August 24.

LAST Tuesday afternoon at 4 o'clock, in the full fervour of an August sun, our sight-loving city poured forth her well-dressed and well-behaved thousands to the Porta San Gallo, and the thoroughfares leading thence to the Cathedral, to witness the solemn entry into Florence of his Holiness, Pius the Ninth, the first Pope who for near a century has honoured our city with a visit. From early morning the streets had been thronged with holiday peasants from the neighbouring hills, and visitors brought by excursion trains from Pisa, Lucca, and Leghorn, and the whole population was in a buzz and palpitation of excitement, a clatter of ladders and illumination lamps, a lounging sing-song state of idleness, a good many degrees more absorbing than usual. The ultra-Catholic High Church party, indeed, if high and low can with reverence be supposed to exist in the domain of *Santa Madre Chiesa*, asserted the existence of a deep and important spiritual movement under this surface-gaiety. The Pope's visit, they said, would be the signal for a sort of revival of lagging faith in a backsliding generation infected by the taint of foreign indifferentism and neighbouring heresies; and the final ratification of the Concordat with Tuscany, and the repeal of the last remnant of the Leopoldine laws, were predicted as the happy results of the Holy Father's presence among us. But in the opinion of the less prejudiced spectators, although there was no lack of eager curiosity, at least, in the flashing eyes and mobile faces which filled the streets, there was not a shadow nor symptom of devotional awe or spiritual aspiration, when the hubbub of bells and cannon announced the Pontiff's departure from Villa Guicciardini, about a mile and a half from the gates, where he had been met by the Grand-Duke, and received the welcome of the high functionaries of the Government. The orderly, good-humoured mob—good humoured even after several hours' waiting in the blazing sun—made smiling way for the very modest *cortège* of Heaven's vicegerent, consisting of a troop of dragoons, a few rather musty State equipages, and a mounted cross-bearer preceding the carriage, all glass and gilding, furbished up afresh from the palmy times of the ex-Duke of Lucca, in which Pius and the Grand-Duke sat side by side. This extremely *mild* manifestation of the sense entertained by Florence of the honour done her by the Pope's visit has occasioned no little speculation on the conduct of the Government which thus ordered matters, and that in a sense far more favourable than usual on the part of our citizens. For it was impossible not to remember that a word from the authorities would have sent forth the whole solemn train of clergy, with banners, shrines, and crucifixes, the Knights of St. Stephen resplendent in *cappa magna*, as on grand solemnities of the church, and all the principal functionaries of the city, civil and military, to meet his Holiness at Villa Guicciardini. The minister, Baldasseroni, is well known to have struggled long and successfully against the exercise of Papal influence in the above-mentioned repeal of the Leopoldine laws yet remaining, and our political quidnuncs putting this and that together, shrewdly conceive that they can discern in the remarkable absence of all *faste* on so solemn an occasion a stout and truly patriotic determination to resist, if it may be, the accomplishment of this greatest misfortune to Tuscany.

The people, too, seemed on this occasion well disposed to "follow their leaders." In Via Larga, indeed, a great number of hats were lifted as the Pope passed by, but not a tongue wagged in acclamation, although our Florentine tongues are for the most part loosely hung enough. Least of all was there any the slightest attempt among the crowd at those humble genuflexions which are, or were a few years back, to be seen hourly in the streets of Rome when the papal hand distributed as now its passing benediction. Again, the very startling fact of the temporal and spiritual rulers occupying one and the same vehicle for their *entrée* is not without its significance, and seems to have been so difficult a feat as to have necessitated the publication at Rome of a separate bull before it could be ventured on in anywise. For to the Pontiff belongs the right of universal precedence, as the Adrians and Gregories of old time were by no means slow to remember; but the irreverent Tuscan Ministry, nothing heeding the immemorial privilege, is said to have so vehemently protested against its enforcement in this case, and so strenuously insisted on their *sovrano* not being forced to be second best in the show, that the urbane Pontiff got over the difficulty by sharing the Duke of Lucca's glass coach with his royal host, and scandalized the Sacred College accordingly by publishing the bull to that effect.

After stopping to offer up a passing prayer at the Duomo, the Pope proceeded to the apartments prepared for him at the Pitti Palace. And here again a bull had been necessary to admit of the Grand-Duchess remaining under the same roof with the Pontiff during his stay in Florence, although her Royal Highness had retired to the second floor of the Palace, leaving the first for the accommodation of her sacerdotal guest and his train. Deeper horror and astonishment, it is reported, among the scarlet mantles at Rome! Fresh shaking of heads and lifting up of hands in righteous deprecation of such *fast* doings.

Great crowds of people were assembled on the Piazza Pitti and on the roofs of the lower wings of the Palace, forming the *Corpo di guardia*, to receive the benediction of his Holiness, which was given from a huge velvet and gold canopy erected over the centre window of the Palace—velvet and gold in nowise to be paid for out of the well-filled purse of the royal host, but grudgingly enough from the earnings of the Florentine householder. The reverential feeling appeared now somewhat more *prononcé* than it had been in the streets, probably on account of the great numbers of priests and *contadini* in the crowd; but the attitude of worship was by no means general even during the benediction, nor were the *virats* which followed sufficiently hearty to warrant his Holiness's return to the balcony to acknowledge them as he condescendingly did—a return which gave rise to not a few comparisons of theatrical tendency in the minds of the more heretical spectators.

With nightfall came the general illumination. It is on such occasions that our city, people, and climate show to the best advantage. The beauty of the view from the New Lung' Arno, whether looking down towards the Cascine, and away to the distant convent of Monte Oliveto, drawn in faint lines of fire on the pure purple sky, or up to the fine old battlemented church of San Miniato, through a brilliant maze of bridges, churches, and palace-lined quays, reflected without wrinkle or break in the glassy river, was such as, I think, even the exquisite Pisan Luminara fails to equal. Military bands were playing at intervals in all the principal squares, on platforms erected for the purpose, and the courteous, peaceful, amusable temper of the population gave to the whole scene that true festival gloss and harmony which is too often wanting to the popular rejoicings of a rougher and more turbulent people.

Great numbers of pendent lanterns, painted, with Moorish-looking patterns, in brilliant colours, were used in this illumination, and produced a beautiful effect as well as being a novelty to the Florence world. The inscriptions, both Latin and Italian, displayed in the numerous transparencies were to the full as novel, to me at least, and by no means so pleasing. The grovelling humility and blasphemous adulation of some of these effusions were almost incredible. The churches and religious establishments especially seemed to vie with each other in lowliness of prostration. The Rector of San Gaetano told, in letters a foot long, how "sibi, clero populoque, apostolicam benedictionem largiaris, Tuis pedibus *provolutus* humillimè deprecatur."

The Palace of the Municipality, on the Piazza Santa Trinità, a noble old pile of the best days of the republic, blazing all over, for the occasion, with great clusters of glowing lights, like the jewel fruits of Aladdin's garden, with equal contempt for truth and common sense, declared of the Pope that "Fatti suoi gli altrui dolori, si rivela Pontefice o Re,"—"In making the sorrows of mankind his own," (witness the prisons of Romagna!)—"he shines forth as Pontiff or as King!" The "Scolopi" fathers, in whose order the Pope received his college education, took a wilder flight, and hymned their pæans "terrestri Deo"; while a splendidly illuminated palazzo in the Via dei Servi called upon Florence to receive the Shepherd of shepherds, "velut ipse Deus!" Amid all this triumph it is, perhaps, a significant hint of modern tendencies that by far the finest private illumination in the city was displayed by the office of the Arezzo Railway. It is true that the Company are extremely anxious for a concession from the Holy Father for the extension of their line to Perugia.

Since last Tuesday every day has been taken up with banquets and benisons, gifts, oblations, and sacerdotal kotooing from morning to night. On Thursday, a grand Oratorio, Raimondi's Trilogia, entitled 'Joseph,' was performed. A very learned but somewhat lumbering and uninteresting work, offered "in token of exultation and devotion," (I quote from the *libretto*) by the municipal authorities to the Pope in the noble hall of the Palazzo Vecchio, hung with span new crimson velvet for the occasion, to be paid for again by the luckless and grumbling *contribuenti*. On Friday the Pontiff administered the Communion to a throng of female devotees at the Church of the Santissima Annunziata. On Saturday his Holiness laid the first stone of the new front of Santa Croce. Yesterday a new batch of bishops were consecrated by him at the Duomo; the poor fasting Hierarch being kept hard at work from seven in the morning till near

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noon. The intervals of such grave business have been filled up with lionizing excursions through the city; visits to churches and convents; a trip to Prato and Pistoja, and numberless receptions; so that his Holiness, it is said, is fairly worked off his legs, and his Holiness's physician rejoices, in all seriousness, at the prospect of decreasing by unwonted exercise the encroaching obesity which threatens the Pope's health. During his stay among us the city has been in a constant ferment of excitement. Crowds were always ready to gather in the wake of the papal carriage. Equipages full of state uniforms, and ladies in the high black dress and veil which is *de rigueur* in the Pope's presence, were to be seen in the streets at every turn, and the "*gent enfroquée*" of priests, monks, and friars went wandering up and down at all hours, with a pursed-up simper of irrepressible triumph on their well-drilled visages, their huge hats cocked jauntily on with a knowing swagger, and looking altogether, and doubtless feeling, as if their millennium were come at last. But it seems that all our seven days' flurry has not sufficed to satisfy his Holiness and the high Codinesque (Anglicè pig-tail) party, who are reported to have denounced Tuscany as a lost country without faith or devotion, and Florence as a city of benighted heathens unconscious of their bounden duty to Holy Church. Doubtless our good citizens must suffer by comparison with the shining lights of the Modenese, where even the educated classes are said, on the Pope's late visit, to have very *literally* rolled in the dust before him, and not unfrequently fallen into convulsions and ecstasies of devotion in his honour. The guns of the *Fortezza da Basso* are at this moment announcing the departure of Pius the Ninth for Pisa by the railroad, escorted by the whole body of directors, including not a few heretics of various denominations. A strange antagonistic jumble of past and present is such a journey to a near observer:—a sort of Dutch Concerto, made up of the Gregorian Chant and Verdi's last new *Stretta*. Visiting Volterra and Siena in his way, the Pope sets his face once more towards the Quirinal, full of compliments and congratulations, some say, indeed, of more substantial offerings collected on the road. If his *progress* through Central Italy have been intended to rouse the lagging piety of the faithful, and to give it a hearty shove on the way it should go, I cannot help thinking, in common with the mass of educated Italians, that it has signally failed in its object. Not without its significance is the pageantry of the huge feather fans which shade the Pontiff on high occasions from the broad noonday gaze of his worshippers. To keep up something of its influence among men his presence should be rather felt than seen. TH. T.

OUR WEEKLY GOSSIP.

A French writer, M. Cucheval Clarigny, has just issued a volume called a 'History of the Press in England and America,' professing, among other things, to tell all Frenchmen the secrets of the various organs of English opinion, literary and political, who is who, what is what, details of sale, lists of writers, and the like. M. Clarigny is not the first writer in point of time who has tried to earn a penny by pandering to a morbid curiosity on this subject, but he is probably the first in point of ignorance and daring. We take the *Athenæum* as an illustration of his acquaintance with the English press. He gives—in the midst of a good deal of complimentary opinion as to its "impartiality," its "liberal views," and its "incontestable superiority"—*three facts*. They are these: That the *Athenæum* is older than the *Literary Gazette!* That it appears twice a week, on Wednesdays and Saturdays!! That its high price confines its circulation to clubs, reading-rooms, and bibliophiles!!! If any of our readers would like to hear all about our contemporaries from the same careful authority they may send for M. Clarigny—if not, not.

Leadenhall Street has made a sign to the Red Sea Electric Telegraph Company, and Government will probably assent. The East India Company offers to pay 20,000*l.* a year by way of guarantee against loss, until the profits of the line shall yield six per cent. to the shareholders. Such an offer should complete the business.

A new Society has been organized, and is about to challenge public criticism in October, at Birmingham. It entitles itself the National Association for the Promotion of Social Science, and puts forth a long list of names. Lord Brougham is the general President—we assume for the year, after the manner of the British Association. Each Section has a lord for President—*not* after the same model. "The object of the National Association," says the prospectus, "is to aid the development of the social sciences, and to guide the public mind to the best practical means of promoting the Amendment of the Law, the Advancement of Education, the Prevention and Repression of Crime, the Reformation of Criminals, the Establishment of due Sanitary Regulations, and the recognition of sound principles in all questions of Social Economy. The proposed mode of action is, once in every year, to bring together the various Societies and individuals who are engaged or interested in furthering any of the above objects; and without trenching upon their independent exertions, to elicit by discussion the real elements of truth, to clear up doubts, to harmonize discordant opinions, and to afford a common ground for the mutual exchange of reliable information on the great social problems of the day. The better to carry out this plan, the Committee have divided the Association, for the present, into five departments, viz.: Jurisprudence and Amendment of the Law, Education, Punishment and Reformation, Public Health, and Social Economy; but at the time of each meeting any Department will, if necessary, be subdivided into Sections for the more convenient transaction of its business."

The Jerrold Committee have published through their Chairman and Secretary the following note:—

"*In Remembrance of the late Mr. Douglas Jerrold.*

"The work we have carried on being now brought to a close, we beg leave, through your columns, briefly to make its result known to the public. We have first to observe that the Committee whom we represent decided in the outset to state no case, and to make no appeal or representation, beyond the line which forms the heading of the present letter. They considered that in taking this course they had a due regard both to the independence of literature and to the personal character of their deceased friend; and therefore they have never for a moment deviated from it, nor do they now depart from it. They have considered their personal responsibility a sufficient refutation of any untrue and preposterous statements that have obtained circulation as to property asserted to have been left by Mr. Jerrold, and they now merely add that, unless they had thoroughly known, and beyond all doubt assured themselves, that their exertions were needed by the dearest objects of Mr. Jerrold's love, those exertions would never have been heard of. The audited accounts show that the various performances, readings, and lectures have realized, after the payment of all expenses, a clear profit of 2,000*l.* This sum is to be expended in the purchase (through trustees) of a Government annuity for Mrs. Jerrold and her unmarried daughter, with remainder to the survivor. We are happy to add, in conclusion, that, although we have been most generously assisted on many hands, and especially by members of the musical profession, we have never consciously accepted a sacrifice that could not be afforded, and have furnished good employment and just remuneration to many deserving persons.—We are, &c.,

CHARLES DICKENS, Chairman.
ARTHUR SMITH, Hon. Secretary."

The Ray Society held its Fourteenth Annual Meeting during the meeting of the British Association at Dublin. Mr. Babington, of Cambridge, was in the chair. The Report stated that the members who had paid their subscriptions for 1856 had received Prof. Allman's monograph of the British Freshwater Polyzoa. Great praise was bestowed by the Council on the author and artist of this work. This year the members are to have for their subscription a work by Prof. Williamson on the British Foraminifera. Prof. Huxley's work on the Oceanic Hydrozoa is promised for 1858. A work by Mr. Bowerbanks on the British Sponges, and one on the general history of Foraminifera, by Dr. Carpenter, were announced. The financial difficulties into which the Council had got through the defalcation of members were disappearing. After a purification of the old list, 700 members remained on the books, and the Council had determined to limit the number of their works to 750 for this and the past year.

The University of Dublin has conferred the following degrees:—*Doctor of Laws (Ordinary):* Sir S. Martin (Baron of the Exchequer).—*Doctors of Laws (Honorary):* C. G. B. Daubeny, Regius Professor of Botany, Oxford; J. Phillips, Reader in Geology, Oxford; W. Thompson (Cambridge), Professor of Natural Philosophy in the University of Glasgow; W. Hopkins (Cambridge); Sir J. Richardson, R.N.; J. E. Portlock, Colonel, Royal Engineers; J. P. Joule; W. J. Macquorn-Rankine, Professor of Engineering, Glasgow; Major-Gen. Sir J. Chatterton.

M. Villeneuve has published, in two stout volumes, his 'Histoire d'Allemagne,'—a work, it is asserted, distinguishing itself by a great impartiality. The author divides the history of Germany into ten epochs; and in those periods, which have been treated, before him, in Prof. Luden's classical work on German history, follows that predecessor with great judgment. Every epoch is preceded by a chapter on the development of Art and Science.

A new play, entitled 'Les Enfants de Béranger,' has been announced as forthcoming at the Théâtre des Variétés, in which Mdlle. Dejazet (now past her sixtieth year) will act the part of Béranger when he was a young man.

There appear, at present, 510 journals at Paris; of which 40 are dedicated to politics, and the remaining 470 to Literature, Art, Science, and the Finances. From the 1st of January to the 7th of August of this year, 108 new journals have appeared in the French metropolis.

We hear of an interesting novelty in historical literature from St. Petersburg. Kings are known generally to make history; but few ever have written it. Among these few, Alexander the Second, Emperor of Russia, must be mentioned,—who, when heir to the crown, had formed the resolution to have written down a minute and detailed narrative of the circumstances that accompanied the accession of his father, Czar Nicholas the First. The Secretary of State, Baron Korff, was appointed as editor, and intrusted not only with all the material which the official documents and the secret records furnished, but also with all the manuscript notes from the hand of Czar Nicholas himself, who had committed to paper, for the remembrance of the Imperial family, everything in connexion with those memorable events. Besides this, Baron Korff had the use of the diary of the Empress-Mother, Alexandra Feodorowna; of the Memoirs of the late Cesarewitch, Constantine, elder brother of Czar Nicholas; of those of the younger brother, Grand-Duke Michael; of the entire correspondence of the different members of the Romanow family; and—last, not least—of the various observations and accounts of living witnesses of, and participators in, the events of the 14th (26th) of December, 1825. The Emperor Nicholas examined and revised Baron Korff's manuscript himself, making alterations where he thought them necessary; and thus has been produced this historical monograph, which (according to court report) "bears the character of undoubtful historical truth." It had been printed in the years 1848 and 1854, but each time only in twenty-five copies, as a strict family secret, and for the exclusive benefit of the Imperial family. The Emperor Alexander has thought proper to share this secret with his people, and to publish the work (a volume of 256 pages in octavo) in memory of his late father. Nothing has been omitted in this new edition; on the contrary, it has been completed by some important data, discovered in the meantime. The profits of the publication are destined to benefit the Imperial Library at St. Petersburg. The impression made by the work on the public of the Russian capital is said to be immense. German, French, and English

translations—to be published simultaneously at Frankfort, Paris, and London—are being prepared at St. Petersburg.

The appearance of a second volume of the 'Catalogue of Manuscripts in the Public Library of Cambridge' gives fresh occasion for congratulating the undertakers of the work on its usefulness. We watch with interest the progress of the Catalogue, carried on by the joint labours of the same eight members of the University, each labouring on a distinct class of subjects, who completed the first portion of the work. The number of volumes described in the present part is about five hundred. They contain works of the usual mixed character, following each other in the same disorder. As of course, theological tracts—and those of the commonest occurrence in collections of Middle Age literature—abound; and amongst them are scattered medical treatises in Latin, of the thirteenth, fourteenth, and fifteenth centuries—all well known and slightly esteemed productions—collections of statutes of the realm, law tracts, books of precedents, with a few Year Books; a very few copies of Latin or Greek classics; and collections of monkish Latin verses, and old English and French romances and ballads—some of them still unpublished, and nearly all worth collating for new editions. Setting aside works of such characters, we distinguish a few others of more special rarity or utility. Amongst these is a collection of original letters of the great Lord Burghley to his son, Sir Robert Cecil, written in the years 1593 to 1598, and including what an indorsement of the time assures us was "My lord's last lettre y^t euer he wrote w^th his owne hand;" and the postscript to which conveys the injunction characteristic of the old courtier-statesman, and uttered, as it were, with his latest breath—"Serve God by servyng of the Quene, for all other service is in dede bondage to the Devill." Many of these letters have found their way into different compilations, but not a few remain still unprinted (No. 1,012). Akin to this volume in interest is a collection of State Papers of the reign of Henry VIII., not included in the publication of the State Paper Commission (No. 1,044); and a series of copies of Latin letters from James I. to the King and Queen Dowager of Denmark, the King of Poland, the Sultan of Turkey, and others; all apparently unpublished (No. 1,268). Of the very valuable class of monastic cartularies and registers we find a few volumes of great interest, and utilized by a thorough description of their contents, document by document. They are, a Cartulary of the convent of Christ Church, at Canterbury, compiled in the time of Prior Henry of Eastrey, who vacated the office A.D. 1331, but containing entries of instruments as early as the twelfth and thirteenth centuries (No. 1,085). The description of this volume occupies no less than sixty pages of the Catalogue. II. A Register of the Abbey of St. Edmund at Bury, compiled in the fifteenth century (No. 1,196). III. A Cartulary of the same monastery, compiled principally at the beginning of the fourteenth century, and containing charters of the Saxon times (No. 1,200). The description of this volume occupies forty-five pages of the Catalogue. IV. The 'Registrum bestiarii, or Registrum W. Pinchebeck,' of the same monastery, the compilation of which commenced in the year 1333, the contents being copies of Papal Bulls, Royal writs and injunctions, and other documents peculiarly affecting the rights of the abbey (No. 1,016). We find but few Greek MSS., but we may point to two of particular value:—I. 'A Collection of Greek Ecclesiastical Documents, chiefly Synodical,' written in the twelfth century (No. 1,046). II. A MS. of the seventh century, containing the two Books of Chronicles; the Commonitorium of Josephus Christianus; the Testaments of the Twelve Patriarchs, presumed by Cave to be the identical copy brought from Athens for Robert Grosseteste, and translated by him into Latin; and other pieces (No. 1,157). The several compilers of the work appear to have done their portions conscientiously. The manuscripts seem to have been thoroughly searched, and their contents minutely described; but whether in all cases correctly can only be determined by comparison with the volumes themselves. The future use of the Catalogue will test its accuracy. In some instances we observe deficiencies; as under No. 933, where a poetical fragment is described solely by its heading as a 'Story of Dame Constaunce,' and is not identified with 'The Man of Lawe's Tale,' in the 'Canterbury Tales.' Where we should be most inclined to find fault is in a want of uniformity in the method and order of descriptions. Titles are printed in all varieties of type, without apparent system; and they are often placed in a very incomplete state at the head of the notice of the tract, the name of author, or other essential, being only to be collected with difficulty after wading through a great deal of diffuse discussion, printed in small type. Even the references to the folios of the MS. are not entered in an uniform arrangement. Great additional convenience would be given for referring to particular manuscripts if the number of the volume were printed on every page of the description of it.

MEETING FOR THE ENSUING WEEK.

Mon. Entomological, 8.

FINE ARTS

Fine-Art Gossip.—The King of Prussia, on his expected visit to Halle, will decide upon the place where the monument of Handel is to be erected. Prof. Heidel is busily working at the model, and devotes the rest of his time to the busts of Niebuhr and Weiss (the geologist), for the Aula of the University of Berlin.

Permission, we hear, has been obtained to erect the statue of James in the open space at Charing Cross. It will form a companion—and a contrast—to the figure already placed there of Sir Charles James Napier.

An Architectural Photographic Association is being formed under good advice and influence. Mr. Cockerell is the President, Mr. Robert Hesketh, Secretary. A preliminary Committee, which had been named to consider schemes and details, has published a report, of which we present the substance:—"Your Committee have taken into their consideration the resolution moved by Sir Charles Barry at the Preliminary Meeting held on the 29th ult.—that is to say:—'That an Association, having for its objects the procuring and supplying to its members photographs of architectural works of all countries, is eminently calculated to be of benefit to the architectural profession, by obtaining correct representations of those works; and to the public, by diffusing a knowledge of the best examples of architecture, and thereby promoting an increased interest in and love of the art.' After deliberating upon the various methods which have been already suggested, by which the objects of the Association may be effectively promoted, and others which have since occurred or have been suggested to them, your Committee are able, with much confidence, to express their conviction, that not only may the Association obtain their photographs in such manner as will prove most serviceable to them, but also at a greatly reduced cost. Basing their estimates upon the statements of individual photographers, your Committee consider that at least three copies of the largest ordinary size—viz., twenty-one inches by seventeen inches—might be issued for a guinea subscription, whereas one of them is now ordinarily sold for about 25*s*. Smaller sizes might be issued in considerably increased numbers, and they are informed that probably from thirty to forty stereoscopic views might be given for a similar subscription. But it is obvious that an Association, having a large and definite number of copies to provide, almost all of which will be issued; having no vendor's profits to pay; and possessing many other advantages not accessible to individuals, may greatly enlarge the issue beyond the number which estimates upon present data would afford. An additional object to architects may probably be attained by enabling them to ascertain, not only the relative proportions, but also the actual sizes of buildings, and their details; as would be effected by simply measuring and noting the distance from the station of the instrument to a fixed point on the object. This would even render it practicable to lay down, on geometrical drawing, every line or point seen on the picture. If the distance should be noted in the measures of other countries, this advantage would be equally extended to them. After the main object of the Association shall have been provided for by the distribution of photographs amongst members to such extent as the funds shall admit of, the formation of a collection of photographs will obviously form a feature in the scheme, and perhaps their exhibition from time to time may be made to further the interests and the objects of the Association. The subscription is proposed to be limited to a guinea. Your Committee look also to the extension of their Association into the provinces; and they are glad to add, that several communications have been received from individuals in England, Scotland, and Wales, expressing their desire to promote the objects of the Association, both as individuals and as members of local societies. With respect to foreign countries, the scheme of the Association may be promoted either by its extension there, or, if independent societies shall arise, by obtaining, on equal terms, an interchange of subjects, and by entering into other amicable relations with them. Having regard to the cordial manner in which the mere mention of the proposal has been received, both by the architectural profession and the public, and the obvious benefits to be derived by association, your Committee recommend that the Architectural Photographic Association be forthwith established, and they now submit the draft rules for its government, which they have prepared in accordance with the beforementioned resolution. Your Committee have much pleasure in announcing that the Council of the Institute of British Architects have, with that readiness which they have always shown in assisting in every object which may tend to the benefit of that art which, by their charter, is confided to their fostering care, have allowed the further use of their rooms for the meetings of this Association during the ensuing twelvemonth, subject to such arrangements as may be made with their Honorary Secretaries. Having now discharged the duties provisionally intrusted to them by the Preliminary Meeting, your Committee and Honorary Secretary resign into your hands the temporary offices assigned to them, with this observation: that as the number and quality of the subjects issued will be in proportion to the number of members, and as the prospective increase of the Association will greatly depend on the first issues made, it is peculiarly advisable that every exertion should be made by members for the immediate increase of their numbers."

On the 27th of August, the monument erected to the late Marquis Lezay-Marnesia (from 1810 to 1814 prefect of the Département du Bas Rhin) was inaugurated at Strasbourg. It owes its origin to the hands of M. Grass, the known sculptor, and is asserted to be a worthy counterpart to the monument of General Kleber by the same master.

MUSIC AND THE DRAMA

NEW PUBLICATIONS.

Vocal Tuition.

Garcia's New Treatise on Singing: a Compendious Method of Instruction, with Examples and Exercises for the Cultivation of the Voice. By Manuel Garcia. (Cramer, Beale & Co.)—One page in this book is not to our taste—the first, we mean, containing the "Publishers' Preface," recommending this second treatise by M. Garcia. M. Garcia stands in need of no such testimonials. Such of the public as care about singing are well aware that he has formed great pupils,—such of "the profession" as teach singing will discuss his practices and precepts with more or less cordiality,—but by no section of either public or "profession" will it be supposed that he can appear in print, except he have something to say, or that his new treatise is *not* a new treatise, and as such worthy of careful attention. For the sake of every one, this "puff preliminary" had been better avoided. The book will be found an admirable treatise,—full of instruction, full of interest in its copious and

original exercises, providing for almost every conceivable emergency,—and containing many observations, precepts, and comparisons not to be met with elsewhere, though indispensable to vocal study at a period when the intellectual side of art is so increasingly considered that there is some danger of its technical portions being neglected. The conciliation of the two seems more carefully provided for by M. Garcia than by any preceptor with whom we are acquainted. Chapter IV., in particular, "On Expression added to Melody," is of the highest value to any vocalist possessed of intelligence: pointing out how the *quality* of tone produced should correspond with the sentiment of the text to be delivered. Too many singers fancy the task done if the music be rightly phrased, the breath imperceptibly taken, and the passages neatly finished. Chapter V., "On Styles," copiously illustrated, is very ingenious,—filled with acute and sagacious remarks, and distinctions on the subject of ornament,—as such especially valuable at present. But, as "style" is the matter in debate, we may suggest that some of the examples (see pages 77, 78, 79, &c.) have a tendency towards super-refinement. We say this with the less hesitation from having fancied that the three great singers of the Garcia school, Mesdames Malibran, Lind, and Viardot, have all been apt at times to exhibit curiosities of modulation and new applications of interval, where the music to be embroidered by its artlessness and thinness claimed a lighter and less tormented style of decoration. Originality and courage can sometimes be shown by rejection of everything that approaches oddity.

The Formation and Cultivation of the Voice for Singing. By Adolfo Ferrari. (Cramer & Co.)—There is more sense in this work than we find in nine out of ten publications of a similar kind. The exercises for vocalization are generally well adapted for their purpose: many of them are ingenious,—a few of almost insuperable difficulty. But, judicious as are many of M. Ferrari's remarks, we cannot pass those on "articulation" (p. 22) without qualification. When writing of the manageable qualities of the English language, if wisely dealt with by singers, our author sanctions such proceedings as the delivery of words such as "*wide*," "*sound*," "*vow*," by "*wa*-ede," "*sa*-ound," "*va*-oo." This is a mistake: one clearly tending to perpetuate those affectations which have so long disfigured our stage diction, to the "*kee-eye-end*" for "kind," the "*skee-eye*" for "sky," and which make sentiment so maudlin and imagery so sickly in the mouths of many a well-meaning *Rosalind* or *Desdemona*. There is no English vowel-sound offering such difficulties to the vocalist and the declaimer as the vowels of the French language. Yet M. Duprez will bear us out in asserting that any expediencies analogous to those recommended by M. Ferrari would not be tolerated in an artist of the first class at the *Grand Opéra*. That they need not be resorted to by cultivated artists of home origin, we may illustrate by recalling the polished, elegant, and musical speaking of Mrs. Alfred Shaw. That the difficulties can be mastered by foreigners, who grapple with them boldly and open their mouths honestly, could be proved by appealing to some half-dozen artists who are happily still in the world of singers, and who sometimes are called on to sing English.

A Treatise on Singing, forming a Complete School of the Art: in Three Parts. By Paolo Pergetti. (Ollivier.)—This third manual of vocal tuition is, again, of a higher quality than many of the works with a similar object put forward during late years. The distinctive character of Signor Pergetti's book may be said to lie in its exercises, which are short and elegant compositions rather than *solfeggi*, by which rebellious organs may be broken into obedience, incomplete registers completed, and tough voices softened into suppleness. It may be further remarked that the entire treatise is arranged principally with a view to Italian singing. That the style in Rome, Milan, and Naples was the true and grand vocal style, we know;—but the tide of composition has ebbed away from Italy and divided itself among channels undreamed of in the days of Gabrielli, *La Bastardella* and Pacchierotti. Hence to complete the singer, who is now-a-days obliged to grapple with Beethoven, to express Mendelssohn, to trifle with M. Auber, and to strain himself up to the height of M. Meyerbeer's requisitions,—something is wanted besides (yet not in contradiction to) that mastery of voice and unimpeachable elegance of taste which sufficed for the days when Ciampi, Cimarosa, or Paisiello furnished the repertory, and German expressiveness and Gallic declamation or gaiety had not become recognized as so many subjects which every thoroughly-prepared singer must have mastered.

MUSICAL AND DRAMATIC GOSSIP.—The festivities at Weimar, on the 2nd, 3rd, and 4th of September, for the inauguration of the pair of statues of Goethe and Schiller and the effigy of Wieland (which also was to be then first displayed), were to consist of three grand dramatic performances, a pilgrimage to the restored castle on the Wartburg, close above Eisenach, and a concert of music directed by Dr. Liszt.

It is not only because of the comet and its consequences, the fiery and frying heat, which makes every one look dejected, save those who own corn and wine, that the "bath season" is described as being less productive than usual to the players and singers who, instead of taking rest after their labours in the capitals, rush to every well that gathers its drinkers, to sing their old songs and play their old *solos* over and over and over again,—but it is, in part, because the good songs and *solos* (and artists, we must sadly add) are also old,—the new candidates bringing no new tricks to tickle the ears, no new melodies to "lap the soul in Elysium," no new thoughts to attract those who love what is more substantial. On every side the cry is the same: the decadence universal, with discouragingly few exceptions, at least so far as Germany is concerned. France is contributing something to the stores of instrumental music: but what is the best, as summed up, compared with the days when a violinist, not himself creative, could choose from among a hundred fresh and charming *solos* by Herr Mayseder, M. de Beriot, Lafont, and half-a-dozen others, and when the pianist had Hummell, Kalkbrenner, Weber, M. Moscheles, all contemporaries, to ransack,—before either Mendelssohn, or Chopin, or M. Thalberg's *thumb*-wonders were thought of? In the German towns, of course, everything seems "more dead than death" just now: there is no Verdi, no Flotow, none of the novelties in which Germany delights; but, in their place, the stock-pieces of the repertory carelessly done, which nobody is expected to hear. At Frankfort they are giving Cherubini's 'Les Deux Journées,'—an opera which we *will not* have tried in England, — seemingly, and M. Meyerbeer's 'Prophet' very, insufficiently. "By the way," adds the Correspondent from whom we have these nothings, "by the Three Fathers of Printing, grouped on the handsome monument lately set up in the Ross-Market, I was irresistibly reminded of the Anabaptist Three whose musical sermon in 'Le Prophète' some have found so dramatic, some so drowsy. They might have walked off the stage at the *Grand Opéra*, and been 'struck to *bronze*' on the spot. Nor did I seem to be alone in my associations, since I heard more than one passer-by involuntarily break out into the droning '*Ad nos*' as he crossed before the pedestal of the group, which is still a fine one."

TWENTY-SEVENTH MEETING OF THE BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE Prince Consort has been elected President for 1859. Here is the chief fact in the Dublin session, brilliant as it has been in all respects. The Association will probably meet in Aberdeen, so as to be near the Queen's autumn residence.

Next year the Association will meet in Leeds—with Prof. Owen in the Presidential chair.

So much for the future. The Meeting in Dublin has been distinguished for its general usefulness as regards science and for its festiveness and geniality as regards the social results. Official banquets and receptions have varied in the Irish capital the usual round of pleasant private hospitalities. The evening lectures have been well attended, and have been extremely popular,—Prof. Thompson having a subject, 'The Atlantic Telegraph,' especially interesting to an Irish audience just now, and Dr. Livingstone, in his 'African Travels,' a subject perennially attractive to all men. Lord Carlisle, as representative of Majesty in Ireland, has done everything which a scholar and a gentleman could think of to make the visit to the banks of the Liffey pleasant and memorable; including a general *conversazione* and a dinner at the Castle. The Council of the Royal Dublin Society have given a *fête* at their Botanical Gardens at Glasnevin. Various excursions have been made into the most beautiful districts within easy railway reach of Dublin. But, after all, the true work of the Association has been done in the Sections,—and this work we proceed to report.

THURSDAY.

SECTION A.—MATHEMATICAL AND PHYSICAL SCIENCE.

President—Rev. Dr. ROBINSON.
Vice-Presidents—J. C. ADAMS, Rev. Prof. GRAVES, Sir W. R. HAMILTON, W. HOPKINS, Rev. G. SALMON, Rev. Dr. WHEWELL, Lord WROTTESLEY.
Secretaries—Prof. CURTIS, Prof. HENNESSY, P. A. NIMMIS, W. J. MACQUORN-RANKINE, Prof. STEVELLY.
Committee—A. D'Abbadie, Dr. Neil-Arnott, Prof. Barker, Prof. Bolani, Prof. Boole, C. Brooke, Rev. Prof. Callan, Rev. R. Carmichael, Rev. Prof. Chevallier, Rev. S. Earnshaw, L. Foucault, R. W. Fox, J. P. Gassiot, Dr. Green, Rev. W. V. Harcourt, Sir W. S. Harris, Dr. Hart, Rev. Prof. Jellett, J. P. Joule, Dr. Lee, Prof. Loomis, the Abbé Moigno, F. F. Osler, Prof. Phillips, M. Roberts, J. Scott Russell, General Sabine, Herr H. Schlagintweit, Herr R. Schlagintweit, G. G. Stokes, H. J. Smith, Lieut.-Col. Smythe, G. J. Stoney, Prof. Thompson, Rev. R. Townsend, B. Williamson, Rev. Prof. Woolley.

The PRESIDENT of the Section (the Rev. Dr. Robinson), on taking the chair, briefly addressed the Section.—In opening the proceedings of this, the principal Section of the Association, I hope a few minutes of your time, precious though it be, will not be misemployed in pointing out to those of you who have not specially devoted yourselves to its pursuits their paramount importance. Its highest department, Mathematical Science, is the noblest, the most nearly approaching to what we may suppose to be the kind of knowledge possessed by beings of an order superior to our own, which man can attain. By it alone we reach that which is the great aim of the good and wise, Absolute Truth. All the rest of our knowledge is only probable, varying in degree from the verge of certainty down to mere shadowy conjecture, and trustworthy exactly in proportion as the intellectual processes which deduce it are trained and used in analogy to its practice. It is also our mightiest aid in exploring the wide fields of Physical and Mechanical Science: in the first, without its guiding light, we wander in a region of phantoms; in the other, though empirical, or, as it is often called, practical knowledge may give an uncertain gleam, yet they who trust to it alone will find ruin and failure in their path. Yet with all its supreme dominion, it can only be attractive to a very few, and the inferior objects of our Section—as Optics, Electricity, Magnetism, Meteorology, and the like—will always be more popular. It were an evil hour for the human race in which it should sink into a secondary place: we have always upheld it, as I trust we always shall do, as our guiding banner. But even for the other we have not laboured in vain,—as was so well shown last night by our accomplished President. His words carried me back to the time when, twenty-two years ago, we met in this city for the first time, and reminded me of the important researches which were originated at that meeting, and of the success with which they were carried out. Some of them I shall name as evidence of what the British Association has done for science. To begin with my own special pursuits.—1. There had been made at Greenwich during the preceding century a vast series of solar, lunar, and planetary observations, matchless in the world, of the highest importance to perfect the planetary theory, but quite useless, because unreduced. How troublesome that process is none know but they who have used it, and it would, perhaps, never have been performed but that we obtained it from Government. It has been perfectly accomplished under the direction of Mr. Airy.—2. There existed a collection of star observations, the *Histoire Célest*, the proudest distinction of the two Lalandes, comprising 50,000 stars, all, however, unreduced and nearly useless. These we have reduced; and at a large pecuniary outlay, we have given to astro-

nomers a catalogue not of less value than those of Bradley or Piazzi.—3. We originated those researches on the strength of iron, by which Hodgkinson and Fairbairn have added so much to the resources of constructive engineers.—4. We called for the investigations, and supplied funds for those discussions of tidal phenomena by which Dr. Whewell has not only thrown light on a most difficult portion of hydrodynamics, but given precious aid to the practical navigator.—5. Two years before that meeting, a great physicist had declared that to improve by theory the former was as hopeless as to get the equation of a breaker; at that meeting a young man, then unknown, produced the germ of those researches which, extended under our auspices, and largely aided by our pecuniary grants, have given J. Scott Russell a world-wide fame, and made possible the construction of those noble ships which, during the last month, have borne from your bay, at a speed twice what was once thought attainable, their freight of heroes, to uphold our nation's power, to avenge our slaughtered countrymen.—6. Lastly, we set on foot that system of magnetic observation of which you heard last night, which has added so much to our knowledge of terrestrial magnetism; nay, which has gone beyond our globe and opened a new range for inquiry, by showing us that this wondrous agent has power in other parts of the solar system. Is not this a list of achievements on which those of us who were then present may look with just pride? May we not venture to hope that when, in the next of its cycles, the Association shall return to this city, those who shall survive to witness that event shall have it in their power to record one yet more brilliant? I cannot expect to be of the number, but the recollection that I have, however slightly, been a partaker in those labours in which the Association has worked so well to increase the knowledge and happiness of mankind, and the anticipation that it will continue to advance in the paths of the purest and highest wisdom, will cheer the remnant of my appointed time. For that advance we must prepare the way, and an occasion seems to offer now. The combined series of magnetic observations to which I have referred has just closed; and I cannot doubt that it is our duty to seek for its continuance and extension on a scale commensurate to the enlarged views which it has already opened. I shall, therefore, soon seek to obtain your concurrence in a recommendation to this effect, and am confident that we shall open a way to a series of new discoveries as much surpassing those which we have commemorated, as our present experience of the mode of making these researches transcends the imperfect methods with which they were commenced. I shall detain you no longer from our work. To mark our sense of the incalculable importance of Pure Mathematics, we always endeavour to devote to it the first days of our week. I cannot, therefore, promise anything attractive, or even intelligible to all of you; but Monday will be given to Meteorology, and Tuesday to Optics, Electricity and Magnetism, which I hope may prove of more general interest.

'Report on the Recent Progress of Theoretical Dynamics,' by Mr. A. CAYLEY.—This valuable Report was read by Prof. Jellett, in such part as could be made intelligible to a general audience. In it the researches of Lagrange, Poisson, Sir W. R. Hamilton and Jacobi were traced through the successive steps of the discoveries of each in chronological order, and the peculiar advantages conferred by each on the science pointed out, and the distinctive merits of each unfolded. As a *résumé* of the whole, the author says, "The leading steps are, first, the establishment of the Lagrangean form of the equations of motion; secondly, Lagrange's theory of the variation of the arbitrary constants, —a theory perfectly complete in itself, and which it would not have been easy to see *à priori* that it would be less fruitful in results than the theory of Poisson; thirdly, Poisson's theory of the variation of the arbitrary constants and the method of integration thereby afforded; fourthly, Sir W. R. Hamilton's representation of the integral equations by means of a single characteristic function (determinable *à posteriori* by means of the integral equations assumed to be known, or by the condition of the simultaneous satisfaction of two partial differential equations; fifthly, Sir W. R. Hamilton's form of the equations of motion; sixthly, Jacobi's reduction of the integration of the differential equations to the problem of finding a complete integral of a single partial differential equation, and the general theory of the connexion of the integration of a system of ordinary differential equations, and of a partial differential equation of the first order, —a theory of which, however, Jacobi can only be considered as the second founder; seventhly, the notion (arising from the researches of Lagrange and Poisson) and ulterior development of the theory of a system of canonical integrals. In conclusion, I remark that the differential equations of dynamics (including in the expression, as I have done throughout the Report, the generalized Lagrangean and Hamiltonian forms) are only one of the classes of differential equations which have occupied the attention of geometers. The greater part of what has been done with respect to the general theory of a system of differential equations is due to Jacobi, and he has also considered in particular, besides the differential equations of dynamics, the Pfaffian system of differential equations (including therein the system of differential equations which arise from any partial differential equation of the first order), and the system of so-called isoperimetric differential equations; that is, the systems arising from any problem in the Calculus of Variations. In a systematic treatise it would be proper to commence with the general theory of a system of differential equations, and as a branch of this general theory to consider the generalized Hamiltonian system, and in relation thereto to develope the various theorems which have a dynamical application. It would be shown that the generalized Lagrangean form could be transformed into the Hamiltonian form; but the first mentioned would, I think, be properly treated as a particular case of the isoperimetric system of differential equations."

'Report on Luminous Meteoric Phenomena,' by the Rev. Prof. POWELL.—In submitting to the British Association my Tenth Report of observations on luminous meteors, I could have hoped that it might have contained some attempt at least towards the classification and generalization of the vast mass of results which have now been accumulated. But while the actual contribution of fresh observations for the year which has elapsed since my last communication is not very extensive, I am also constrained to admit that I have as yet attempted very little towards the greater object in view. In the present communication, nevertheless, besides the mere detail of observations, I am able to include notices of one or two important speculations on the subject which have been pursued by some eminent men who have turned their attention to this inquiry, and have followed out some generalizations on certain points connected with it, which seem eminently valuable towards the gradual establishment of a solid theory of meteoric phenomena. I. Some generalizations respecting the causes of meteor phenomena, especially the averages of their horary variation in numbers through the night, have been advanced by Mr. G. C. Bompas founded on the observations of MM. Coulvier-Gravier and Boguslawski. The general result of those observations is, that the number of meteors varies through the successive hours from 6 P.M. to 6 A.M., by a regular increase up to the last-named hour. The number which appear in the East is more than double the number originating in the West, those from North and South nearly equal. In other words, nearly two-thirds of the whole number originate in the eastern hemisphere of the sky. From the observations of Boguslawski and others it appears that the average velocity of meteors is about double that of the earth in its orbit. Mr. Bompas, combining these facts, deduces the following theory, derived solely from the conditions of the earth's motion. The greatest number of meteors is encountered when the observer's meridian is in the direction of the earth's motion, which is at 6 A.M., and then decreases to 6 P.M. when he looks the opposite way. If the earth were at rest meteors (supposed equally distributed) would converge on it equally from all quarters. But the earth, in fact, being in motion with a velocity half that of the average velocity of the meteors, it encounters nearly two-thirds of the number, on the side towards which it is moving. II. A considerable series of results has been investigated by M. A. Poey respecting the colours of luminous meteors, derived from extensive sets of observations collected by M. E. Biot from those made in China from the seventh century B.C., to the seventeenth century A.D.;—those collected in the Reports of the British Association; and those made at Paris by M. Coulvier-Gravier. Among these generalizations we may remark the following: —In the Chinese observations meteors of simple primitive colours are very rare; the great majority being of compound tints. In the European observations the reverse is the case. The Chinese observations show a remarkable constancy of tints during a long period of years; when an equally constant but different scale of colour prevails, and this for several successive periods. Cases of complementary colours in the body of the meteor, and the train or fragments, are often noticed. Changes of colour during the course of the meteor are observed, being most usually from white, near the zenith, to blue, near the horizon, but sometimes from white to red. This, the author observes, agrees with the law of M. Doppler, that a luminous body moving towards the observer will change its colour from white, in succession to the violet end of the spectrum; moving from the observer to the red. This law, he states, is especially confirmed by the Paris observations. He remarks on the necessity for attending to personal differences in observers' estimate of colour. A remark fully confirmed by the great contradictions existing in the descriptions of the colour of many of the brightest meteors, at the same time and place, by different observers. He gives the results of the various observations cited, in tables exhibiting the number of meteors of each tint for each month, and adds others of meteors arranged under several heads, of physical peculiarities. III. One point of the highest interest and importance towards forming any sound theory of meteors is, the estimate of their actual size from their apparent diameters and calculated distance. In all the results usually given this calculation is made on acknowledged geometrical principles, assuming that the apparent disk is the real one, diminished only by the effect of distance. Prof. J. Lawrance Smith, of the United States, has adduced some very remarkable optical experiments to show the entire fallacy of any conclusion from the apparent diameter of a highly luminous or incandescent body seen at a distance. These experiments exhibit a singular apparent enlargement of the visible disks of intensely luminous bodies of known size, when observed successively at distances of 100 yards, of a quarter of a mile and half a mile; at which distances respectively, for example, the body of electric light of carbon points (actually 0·3 inch diameter) appeared one-half, three times, and three and a half times the diameter of the moon; and other incandescent bodies in a similar proportion depended on the degree of ignition. These results seem dependent on some optical or ocular cause of greater energy than we can ascribe readily to simple irradiation; but in a rough way they admit of some degree of verification by looking at a row of street-lamps seen nearly in a line from the eye, the apparent diameters of which do not decrease at all for a considerable distance; and even then by no means in proportion to the law of perspective. This subject appears to be one eminently deserving of more full and precise investigation, whether in a meteorological or an optical point of view. IV. Prof. Lawrance Smith's paper is, however, mainly devoted to other points of not less importance respecting the nature and theory of meteors, and especially of those which fall either wholly or in portions, producing meteoric stones. He gives a minute account of five specimens found in America, accompanied by chemical analyses, from which it appears that they all contain the mineral called Schreibersite, not known as a natural compound on the earth. He enters largely on theoretical views, and in the course of these speculations examines various hypotheses which have

been put forth; and eventually endeavours to revive the theory of the origin of these bodies from the lunar volcanoes supposed at some remote period to have been in a state of activity. Without discussing such a question, which will perhaps be generally viewed with suspicion at the present day, and passing to the general subject of shooting stars, which the author is inclined to distinguish entirely from those masses which have fallen to the earth,—we may notice the apparently favourable mention he makes of the general admission of the cosmical nature of the former, and of that view of their nature which regards them as nebulous masses revolving in one system. It has been further supposed that such masses being in a high state of electric tension on approaching the earth, a discharge might take place by which their metallic elements might be reduced; dependent on the size of the nebulous mass, the force of the discharge, the consequent intensity of the fusion, and other conditions, larger or smaller metallic or earthy masses might be precipitated and might fall entire or shattered into fragments. The author, however, considers these latter effects as incompatible with the conditions of observant meteorites. But probably, on the whole, all such speculations are as yet premature. We must obtain a larger amount of data and better classification of observations before we can hope to follow out such inferences successfully. V. In some of the earlier of this series of reports reference was made to the theory proposed by Sir J. Lubbock, of meteors shining by reflected light, and being simply darkened by entering the earth's shadow, and to some observations which coincided with it. It is much to be regretted that other observations of a kind capable of such application have not been more frequent. One remarkable instance observed by Capt. Jacob at Bombay was considered some years ago by Prof. C. P. Smyth and a communication on the subject made by him to the Royal Society of Edinburgh (1849), of which a short notice in the *Proceedings* of that body is the only remaining record, the details having unfortunately not been preserved. The results, however, are stated to accord exactly with the theory. VI. Of the August meteors for the present year the only notice which has reached me has been an account published by Dr. T. Forster, of Brussells, in the *Times*. He observed great numbers, some of them presenting unusual appearances, especially in regard to colour.

The ABBÉ MOIGNO, who addressed the Section in French, referred to the recent observations discussed by the astronomers of the Imperial Observatory of Paris on the parallax of shooting stars. From these observations it appeared probable that these bodies are much closer to the earth than what is generally supposed, so close, indeed, as to assist by their appearances in the solution of the problem of the determination of the earth's atmosphere.—Prof. HENNESSY referred to similar observations made in Germany by Brandes and Benzenberg about the beginning of this century. He also pointed out how the observed fact of the greater number of these bodies striking that part of the earth's surface about the meridian lying in the plane of the earth's orbit would tend to produce a resistance to the earth's motion which, however small, might, if sufficiently long continued, become at length appreciable.

'On certain Electrical Phenomena in the United States,' by Prof. LOOMIS.—Atmospheric electricity is very abundant in the United States, and often exhibits phenomena more remarkable than are witnessed in most of the countries of Europe, especially in England and Germany. These phenomena are not confined to any particular season of the year; but the exhibitions in summer appear under a different form from those of winter. In summer, free electricity exhibits itself chiefly in the form of lightning during thunderstorms; and these exhibitions are often among the most sublime and impressive phenomena witnessed in any part of the globe. The telegraph wires are exceedingly sensitive to the approach of a thunderstorm. The wires are often charged with electricity, from the effects of a storm so distant that no thunder is heard or lightning seen. I have often stood at such times in a telegraph office, and introduced my own body into the electric circuit, by taking hold of a telegraph wire with one hand and with the other hand grasping a wire which communicated with the earth. A frequent twinge is felt in the arms and sometimes through the breast. The shock is pungent and painful, even when scarcely the slightest spark can be obtained by bringing the two wires nearly in contact. Such experiments are unsafe when the electric cloud is near. If, during the passage of a thunder shower, the telegraph apparatus is left in communication with the long telegraph wires, the fine wires of the electro-magnets are almost sure to be melted, and the magnets thereby rendered useless. Sometimes, in telegraphic offices, there occurs an explosion, which melts large wires and is dangerous to human life. The effect of a feeble current of atmospheric electricity on the telegraph wires is the same as of a current from a galvanic battery. It makes a dot on the telegraph register; and, when a thunder-storm passes in the neighbourhood of a telegraph line, those dots are of constant occurrence; and, being interposed between the dots of the telegraph operators, they render the writing confused and often illegible. The operators are, therefore, commonly compelled to abandon their work when a thunder shower prevails in the vicinity of any part of the line. The aurora borealis is very common in the United States, even in summer; but, on account of the long-continued twilight, it is seldom witnessed with such brilliancy in summer as in winter. During winter, thunderstorms in the United States are of very rare occurrence; but even at this season they are not entirely unknown. Sometimes in mid-winter, after a series of unusually warm days, a strong wind suddenly springs up from the west, attended by a shower, during which several flashes of lightning, accompanied by thunder, are noticed. Such a shower is invariably followed by a great and sudden fall of the thermometer. But, while electrical discharges in the form of lightning are rarely witnessed in winter, other electrical phenomena of great interest are of almost daily occurrence. Those phenomena consist of free electricity residing upon almost all bodies resting on the earth, but sufficiently insulated. This free electricity is particularly noticeable on the clothes and hair of the human body. During the cold months of winter, the human hair is commonly electrical, and especially when it is brushed with a fine comb. Often at such times the fine hairs are seen to stand erect; and the more you comb to make them smooth, the more obstinately they refuse to keep their proper place. If you present your fingers to those electrified hairs, they fly to meet you, like a lock of dry hair attached to the prime conductor of an electric-machine. In such cases, there is but one remedy; the hair must be thoroughly moistened; after which it lies quietly in its place. During the same season of the year, all woollen articles of clothing become highly charged with free electricity. The pantaloons in particular are found to attract light, floating particles of dust, down, &c., especially near the feet; and it is impossible to cleanse them by brushing. The longer you brush, the more your clothes are covered with dust and lint. Nothing less than a wet sponge is efficient to cleanse them. At night, when you take off your pantaloons, you hear a distinct crackling noise, and, in a dark room, perceive a succession of flashes. You draw your fingers down over them, especially near the lower extremities, and you perceive a repetition of the crackling noise, accompanied by distinct flashes of light. As you take off your flannel drawers, the crackling is again heard, louder than before, and the flashes of light are more vivid. If you take a woollen blanket from your bed, hold it suspended in your left hand, and draw the fingers of your right hand over it:—the crackling is equally loud and longer continued. Your fingers seem enveloped in a blaze of light, and the flashes can be several times renewed. Brute animals do not escape the general electrical influence. In a cold, frosty night, you draw your hand gently over a cat's back, and you hear a distinct crackling noise, while the cat shows unmistakeable signs of bad temper, and refuses her consent to play the philosopher with you. Persons riding on horseback during a snow-storm in the night have frequently noticed the extremities of their horse's ears tipped with light, like that of a pale, steady flame. The preceding phenomena are either unknown in summer or are only noticed occasionally, and in an inferior degree; but the aurora borealis is often witnessed in the United States during winter, and frequently attains a splendour such as is surpassed in but few portions of the globe. During the severity of winter, and especially in houses which are furnished with heavy carpets and kept thoroughly warmed, even more remarkable electrical phenomena are often witnessed. If you walk across such a carpet with a slight shuffling motion, and then present your knuckle to some metallic object, as the knob of a door, you perceive a decided spark and a faint snap. By walking rapidly two or three times back and forth the spark may be increased, and becomes, perhaps, a quarter of an inch or more in length, and has great intensity accompanied by a smart snap. This phenomenon is not peculiar to any particular house or style of carpet, but in the cold months can be witnessed in almost every house in New York where there is a thick woollen carpet and the room is kept habitually well heated and dry. In some houses these phenomena are so remarkable that persons who have never witnessed them have listened to the accounts with evident incredulity. A few winters ago I received from a female friend an account of some phenomena which she had witnessed at the house of Mrs. C., in New York, and which appeared so remarkable that I concluded the account must be greatly exaggerated. I was induced to call on Mrs. C., and request her to favour me with an exhibition of her electrical powers, to which request she readily acceded. We were sitting in a parlour covered with a heavy velvet carpet, and lighted with gas by a chandelier suspended from the ceiling. Mrs. C. rose from her chair, advanced one or two short steps, and gave a slight spring towards the chandelier, which was above her reach when her feet rested upon the floor. As her finger approached the metal I perceived a brilliant spark and heard a snap such as would have attracted the attention of a person casually walking through the hall, separated from the parlour by a closed door. The spark was more brilliant than that which is furnished by an ordinary electrophorus when most highly excited, but its length was not so great. A few steps upon the carpet were sufficient to renew the electric charge, and the spark was perceived whenever Mrs. C. touched a metallic object, like the knob of a door or the gilded frame of a mirror. The facts which had been before recited to me now no longer appeared incredible, and most of them I verified by my own observations. On approaching the speaking tube to give orders to the servants, Mrs. C. repeatedly received a very unpleasant shock in the mouth, and was very much annoyed by the electricity until she learned first to touch the tube with her finger. In passing from one parlour to the other, if she chanced to step upon the brass plate which served as a slide for the folding-doors, she received an unpleasant shock in the foot. A visitor upon entering the house, in attempting to shake hands with Mrs. C., received a shock which was quite noticeable and somewhat unpleasant. A lady on attempting to kiss her was saluted by a spark from her lips. Her little girl on taking hold of the knob of a door received so severe a shock that she ran off in great fright. Larger children frequently amused themselves by shuffling about on the carpet and giving each other sparks from their fingers. The preceding is the most remarkable case I have myself witnessed; but I have heard of several other houses in New York which appeared about equally electrical; and most of these phenomena have become so familiar in New York that they have ceased to excite surprise. The electricity thus developed exhibits the usual phenomena of attraction and repulsion, and is capable of igniting combustible bodies. By skipping a few times across the room with a shuffling motion, and then presenting the knuckle to an open gas burner, the gas may be ignited. This experiment generally fails unless the burner be warm; but if after a jet has been some time burning you extinguish the flame and then draw a spark with your knuckle from the warm burner, the gas

is readily ignited. After a careful examination of several cases of this kind, I have come to the conclusion that the electricity is excited by the friction of the shoes of the inmates upon the carpets of the house. I have found by direct experiment, that electricity is developed by the friction of leather upon woollen cloth. For this purpose I stood upon an insulating stool, and spreading a small piece of carpeting upon a table before me, rubbed a piece of leather vigorously upon it; and then bringing the leather near the cap of a gold leaf electrometer, found that the leaves were repelled with great violence. The electricity of the leather was of the resinous kind. Electricity must, therefore, necessarily be excited whenever a person walks with a shuffling motion across a carpet; but it may be thought remarkable that the electricity should be intense enough to give a bright spark. In order to produce the highest effect there must be a combination of several favourable circumstances. The carpet, or at least its upper surface, must be entirely of wool and of a close texture. From my own observations I infer that heavy velvet carpets answer this purpose best. Two thicknesses of ingrain carpeting answer very well. A drugget spread upon an ingrain carpet yields a good supply of electricity. The effect of the increased thickness is obviously to improve the insulation of the carpet. The carpet must be quite dry, and also the floor of the room, so that the fluid may not be conveyed away as soon as it is excited. These conditions will not generally exist except in winter, and in rooms which are habitually kept quite warm. The most remarkable cases which I have heard of in New York have been in close, well-built houses, kept very warm by furnaces. These furnaces are erected in the cellar and are filled with anthracite coal, which is kept constantly burning from autumn till spring. The heated air is conveyed to the hall, the parlours, and to every room in the house, as far as is desired, through large flues built in the walls, the flues having a section of about one square foot. In such a house the wood during winter becomes very dry, and all the furniture shrinks and cracks. The electricity is most abundant in very cold weather. In warm weather only feeble signs of electricity are obtained. The rubber, viz., the shoe, must also be dry like the carpet, and it must be rubbed upon the carpet somewhat vigorously. By skipping once or twice across a room with a shuffling motion of the feet a person becomes highly charged; and then upon bringing the knuckle near to any metallic body, particularly if it have good communication with the earth, a bright spark passes. In almost any room which is furnished with a thick woollen carpet, and is kept tolerably warm and dry, a spark may thus be obtained in winter; but in some rooms the insulation is so good, and the carpets are so electrical, that it is impossible to walk across the floor without exciting sufficient electricity to give a spark. It may be thought that in walking across a room there is but little friction between the shoe and carpet, but it should be remembered that the rubber is applied to the carpet with uncommon force, being aided by the entire weight of the body, so that a slight shuffling motion of the feet acts with great energy.

'On the relative Accuracy of the different Methods of determining Geographical Longitude,' by Prof. Loomis.—The author first gave a rapid sketch of the several methods of determining differences of longitude adopted by astronomers and geographers, and pointed out the degree of accuracy that might be expected from each, and drew as the conclusion of this branch of his subject, the importance of obtaining a method far more accurate than any of the preceding, and in which the personal equations of the observers would either be eliminated or greatly reduced; and such a desideratum he considered was afforded by the electric telegraph. He then explained at length the various methods resorted to by Dr. Bache, Prof. Morse, himself, and other American philosophers, the chief peculiarity of which was using either a sidereal and mean-time clock at the recording-station; the beats of these, coinciding every six minutes, gave well-marked equidistant points of time to which to refer the signals received every second from the observing end or station; or by using a sidereal clock and chronometer, beating twice each second, intervals of three minutes became similarly marked out. Then, by alternating the stations at which the observations were made and recorded by interchanging the observers at these stations, the instruments remaining unchanged, and by various mechanical improvements in the recording apparatus of the telegraph, chiefly with a view to insure uniformity of motion in the slips on which the recording dots were impressed, he showed that a degree of accuracy hitherto not approached by any other method had been obtained,—the error of both clocks disappearing also in the results if only their rates had been made perfect.

M. Antonio D'Abbadie addressed the Section, pointing out the importance of this inquiry to himself and other travellers; and inquiring from Prof. Loomis whether he could give an exact numerical estimate of the accuracy to be obtained in the use of each method, especially those which he in practice as a traveller found most convenient, namely, determining altitudes and also azimuths of the moon accurately.—The President (Dr. Robinson) said, Dr. Loomis's remarks on longitudes deduced from the method of moon culminating stars reminded him of the results which he had formerly obtained by it. The high praise given to it by the German astronomers, and his valued friend, the late Mr. Baily, had induced him to attend to it, particularly when determining the longitude of the Armagh Observatory. He found it very unsatisfactory. The longitudes deduced by comparison on the same night with Dublin, Greenwich, Paris, and Königsberg (all first-rate observatories), were very discordant; and those deduced from the first limb by himself, and the second by his assistant, once differed fifty seconds. He found the cause of this to be that the personal equation of the observers, and unequally, for the two limbs, and both are greater than for stars. The reason of this is obvious, for the field round the moon is very dark by contrast, and it is not easy to compare a luminous space with a dark one. He found that in fog, when the field is nearly as bright as the lunar disc, the longitudes were the most consistent, and this led to a mode of illumination which proved effective, and which he now mentioned in hopes it might be useful to travellers, as a most effective means of getting longitude if provided with a transit, especially one similar to the "broken telescope" of Reichenbach's universal instrument. He placed in front of the object-glass a disc of emeried glass, from the centre of which a circle is cut fourtenths of the diameter of the object-glass. This portion forms the image, but the remaining portion fills the field with scattered light from the moon, while it contributes none to the image. The effect is similar to that of the fog, and it nearly reduces the personal error to that of stars. The small aperture, however, gives a larger diameter of the moon, and therefore both limbs should be used in nearly equal proportion. With these precautions, he thought the longitude could be obtained more certainly than by any other means within the reach of a traveller, certainly far surpassing the ordinary one of lunar distances.—Prof. Loomis replied to the questions of M. D'Abbadie.

'On the Interpretation of certain Symbolic Formulæ and Extensions of Taylor's Theorem,' by the Rev. Charles Graves.—It would be impossible to make this mathematical communication intelligible to the general reader, nor indeed to the mathematician, without the use of very complex symbols.

FRIDAY.

'Remarks on some Physical Observations made in India by the Brothers Schlagentweit,' communicated by H. Schlagintweit.—I request to be allowed to communicate a few remarks concerning some of the physical observations we made during our mission to India. I must confess that I make a rather arbitrary choice from the materials before me, the objects which offered themselves for observation being so novel and numerous, that I should in vain attempt to give in a few words, and within so short a time after our return, a proper outline of the physical phenomena of India and of the Himalayas in general. In reference to the magnetic phenomena, we were particularly surprised to find that the Himalayas exercise a well-defined and a general influence on the magnetic laws, the declinations showing a slight but general deviation towards the central parts; and the magnetic force being generally greater than it was to be expected in that latitude. This was particularly evident in Thibet and at the northern foot of the Huenluen in Turkestan. In Southern India, which was particularly the territory chiefly examined by our brother Adolphe, he found the increase of magnetic intensity from south to north very rapid. The lines of magnetic intensity have a form which will probably show many analogies with some groups of isothermal lines, especially with those for the temperature of the soil. This we anticipated already during our first journey through Southern India from Bombay to Madras, and consequently we directed our especial attention to the temperature of the ground. I am happy to be able to add, that we were fortunate enough to have the constant use of our geo-thermometers, some of which had a total length of 9 feet, the bulb reaching 2 mètres below the surface. Local irregularities of magnetism are, comparatively speaking, more rare and more limited than has generally been expected. Only in the Khrisa hills the declination was about 4° more to the west than might have been supposed. When the instruments were carefully placed on alluvial deposits, even of a comparatively small depth, instead of being part of the rocks themselves, the magnetic action of the soil was always found a very small one. In Western and Central India, particularly in the Deccan, and again, in the crystalline rocks of Behar, the stones themselves were found magnetic with polarity, the poles coinciding generally with great regularity, and with angles formed by the intersection of different cleavages. Our geological collections containing also, besides the specimens of rocks, pieces showing the cleavage plains, which were washed on the spot; in reference to their natural position, it will enable us to ascertain later, with still more precision, the connexion between polarity and cleavage by subsequent experiments. In reference to Meteorology, I may mention chiefly the following. Besides, meteorological researches of our own, we were furnished, particularly in reference to temperature, with a rich material of observation, made chiefly by the Medical Department of the India Service, which will enable us, combined with those used by ourselves, to construct a very detailed map of isothermal lines of India. For the mountainous parts of India Proper, as well as for the Himalayas, we propose to give the isothermal lines in connexion with the well-known topographical contour lines, which, as we think we have successfully tried, already show much better than representations in the form of profile the characteristic forms of isothermal lines in a country covered by mountains. But I am afraid to enter here into too many details by even alluding to objects of so great a generality, and I therefore prefer to limit myself to some special and isolated facts of a character rather unexpected to us, or new. The barometric daily variation in the Himalayas, even up to heights of 18,000 and 20,000 feet, was found to show, when the curve was sufficiently defined, the maximum and minimum of the day at hours nearly corresponding to those on the plain, but the differences between the extremes gradually decreased. The barometric variation in the Himalayas has, therefore, in heights of 18,000 feet, not yet the inverted form, which was found formerly by theory to take place in the free atmosphere in Europe at about 9,000 to 10,000 feet, and which actually was observed on all high altitudes of the Alps. This seems very well to coincide with the fact, that the mass elevated in the Himalayas to 18,000 feet, at least in the parts where the greatest general elevations are found, is still comparatively greater,—that in the Alps at 10,000 to 11,000 feet. In reference to electricity, detailed observations were particularly made in the eastern Himalayas. I there once had also a very remarkable occasion to observe the uniformity in the apparent size of a stroke of lightning which fell from a cloud about 1,500 feet above me, and reached a tree at a very small distance from my tent. The way of the spark appeared as, usually,

as an uninterrupted line, but did not increase in apparent size when approaching, which allows for the spark itself only an infinitely small size, which is not appreciably affected by its distance from the eye, and makes defined the visibility of lightning not from its real size, but chiefly from the intensity of its light. The transparency of the atmosphere was measured up to 16,000 feet with the diaphonometer we formerly used in the Alps, consisting of two black circles, on white ground, of unequal diameters. In heights above 17,000 feet the two circles disappeared at the same angle, showing that there the diminution of transparency produced by a stratum of air of about 3,000 feet is no longer appreciable to our eye. During the dust-storms in Upper India, I regularly observed a very unexpected colouration of the sun, the disk assuming occasionally a decidedly blue colour (as if seen through a blue-coloured glass), and the shadow of a thin object on white paper becoming orange. This blue colour of the sun was invariably perceptible when the sun had declined so far that it could be seen through a sufficiently dense stratum of suspended matter. I may add here, though perhaps rather out of place, that we also made some observations on the transparency of the water, similar to those made on the transparency of the air. A white stone, covered during some experiments with different colours, was allowed to disappear, under necessary precautions, whilst gradually lowered in the water, and then the distance from the surface measured. The greatest transparency in the water corresponded to a depth of 53 feet in the Mediterranean near Corfu. In the tropical seas we invariably found it to disappear beyond a depth of 30 feet. In the rivers of India, in which suspended matters abound to such an extent, in the Ganges, the Brahmapootra and the Indus, that there it generally disappeared at five to six miles below the surface. Water containing the suspended matter, collected in many cases, will allow us later to establish more accurately the relative connexion between the transparency and the form and quality of suspended matter.

M. D'ABBADIE begged leave to ask some questions—whether M. Schlagintweit had ever used the method of taking altitudes of stations by the temperature of water boiling in an open vessel?—and what his experience was as to the relative accuracy of that method, and of the barometer in taking elevations?—and what precautions he used? M. SCHLAGINTWEIT replied that he had used that method; that he found it both accurate and convenient; that he used a small brazier of charcoal in preference to a spirit lamp, as he found the spirits in elevated stations apt to be thrown or blown out of the lamp, and that by a simple contrivance of a tube drawing out like a telescope, he found he could protect the mercury from the cold, and keep it surrounded with the escaping steam as it ascended in the stem of the very sensitive thermometer,—a matter which he considered of much consequence, as even touching the scale of the thermometer with the hand was found to affect it. He also mentioned some precaution as to the scale not being of glass, which we did not catch.—The second question M. D'ABBADIE wished to ask was, whether M. Schlagintweit had ever experienced, during the dust storms of which he spoke, those sudden darkenings of the sun, with which he, as a traveller in the Desert, was so familiar, which suddenly seemed to surround them on all sides, and sometimes completely shut out the light of the sun? He also wished to know, if he had experienced them, to what height in the Himalayan range they were found to extend?—M. SCHLAGINTWEIT replied that he had experienced them, and that he had found them to occur at an elevation of 2,000 feet.—The third and last question M. D'ABBADIE wished to ask was, whether M. Schlagintweit had ever in India observed a phenomenon which was common in many places he had visited. Those deep water-worn gulleys, which he believed in India were called nullahs, he had frequently met. Now in these, occasionally, when the most suffocating heat and calm prevailed, suddenly a light breeze sprang up, which soon increased to a gale, and at length became so furious a storm that man found it impossible to stand upright, and many and even large objects were irresistibly carried along by it. Now his experience was, that the course of this storm always followed the course of the waters, insomuch that he was inclined to believe that it was a fixed law, and he wished to know whether the same law was observed to hold in the nullahs of India?—M. SCHLAGINTWEIT replied, that the storms alluded to suddenly came on in those deep gulleys in India as if the hot air in them was in a state of unstable equilibrium, which the slightest disturbance at any part was apt to overthrow along its entire extent; but as to the law observed by M. D'Abbadie, this could not be the case in India, as at the time when these storms took place in them they are quite dry, and without water running in either direction.

'On Simultaneous Isothermal Lines,' by Prof. HENNESSY.—Having briefly referred to the interest shown by the Association in the question of distribution of temperature over the surface of the earth by the publication of the maps of Prof. Dove, and acknowledged the importance of the results furnished by a comparison of mean temperatures in connexion with the climatology of the globe, Mr. Hennessy proceeded to describe the new species of isothermals now proposed. If temperature were recorded at every station on the surface of the earth at the mean time corresponding to any given meridian, then a line traversing the places where such temperatures were found to be equal would be a simultaneous isothermal line. The forms of such lines would manifestly depend on the diurnal range of temperature at the several stations, as well as the several physical conditions influencing mean temperature. If the earth were absolutely at rest, and stripped of its fluid coverings, these lines would be circles, having their planes perpendicular to a line joining the centres of the earth and sun. This would be nearly the case in a body turning very slowly on its axis, like our satellite, in which Prof. Hennessy anticipated that observations would ultimately show a great diminution of heat radiated from the edges compared to the centre. With a more rapid motion of rotation, as in the case of the earth, the isothermals would be elongated in a direction parallel to that of the rotation. On introducing the influence of all the actual motions of the earth, and of the emissive and absorbing powers of the atmosphere, the ground, and the sea, the forms of these lines would be considerably modified. The forms of these lines on the land and sea would necessarily differ, and might be expected to present some important relations to the directions of land and sea breezes. It appears, in general, far more probable that a knowledge of the contemporaneous conditions of temperature at different places would assist in pointing to a connexion between these phenomena and atmospheric perturbations rather than a knowledge of mean temperature. Atmospheric currents, whether vertical or parallel to the earth's surface, depend upon contemporaneous differences of temperature. A similar remark might be applied to many other important atmospheric phenomena, and these lines would also serve to indicate more clearly, or to lessen the possibility of the supposed connexion between terrestrial magnetism and terrestrial temperature.

'On a System of Geodetics and the Conjugate System, traced on the two Sheets of a Surface of Centres, with special reference to the Case in which the Surface of Centres consists of an Ellipsoid and a Confocal Hyperboloid,' by Prof. CURTIS.

'On a Moveable Horizontal Sun-dial, which shows correct Solar Time within a Fraction of a Minute,' by M. DONOVAN.—The author first gave a short account of common horizontal dials, showing that, in consequence of the penumbral shadow of the gnomon, they could scarcely ever give the time within three minutes, even when they were well constructed and carefully set. He then explained his own dial, which, though large, was portable, with means of setting it in the meridian and truly horizontally, which he explained. The circle of the dial was about thirteen inches diameter; towards its south point a fine needle rose, from which two human hairs proceeded, one in a fixed position, parallel to the earth's axis at the place; this was supported by a stout brass arch, which could be shortened or lengthened, and which had a fine slit at its upper part to hold the fixed hair. The shadow of this hair the author stated was always sharp and well defined for about three inches from the needle, round which a small hour-circle of about that diameter was graduated. The floating hair, as the author called it, being taken by the hand and laid along the shadow of the fixed hair so as to bisect it where it was sharp, was stretched out to an outer graduated hour-circle, where the induction could be easily read off to a fraction of a minute, amounting to a few seconds.

'On a new and singular Acoustic Phenomenon,' by M. DONOVAN.—The author explained the beats which are experienced when two strings tuned nearly, but not exactly, to unison, are struck at the same time. He then stated that the Earl Stanhope had observed that when a tuning fork whilst vibrating was held to the teeth similar beats were heard, which he, Earl Stanhope, attributed to the two prongs of the tuning fork not being in exact unison. This effect the author often tried to experience, but never could succeed until upon one occasion, just after he had ceased from violent exercise, having applied the fork to his teeth, he distinctly heard the beats. He was thus led to the true origin of the phenomenon, which he could now experience whenever he wished, by running a short distance, particularly up and down stairs. The effect was caused by the beatings of his own heart, or the pulsations of the circulating blood. Mr. Ninnis, one of the Secretaries, would explain the phenomenon described by the author, to one set of vibrations propagated to the auditory nerve through the bones of the teeth, and of the head, modified by the action of the heart interfering with other pulses propagated in the ordinary way through the air to the organ of hearing.

'On some Transformations of a Sum of Factorial Exponentials,' by M. GUSTAF PLARR.—Although the author assured the Section that notwithstanding the formidable appearance of his formulæ, yet the principle was very simple and the transformations easy in application, yet we should despair of making them intelligible to non-mathematical readers.

'On the Solidification of Fluids by Pressure,' by Prof. HENNESSY.—The views put forward were deduced from some propositions in the dynamical theory of heat contained in the writings of Prof. W. Thomson and Prof. Clausius. The general result arrived at regarding the influence of pressure on a fluid so circumstanced as to lose no part of the heat acquired by condensation would be, that so long as the matter continued in a fluid condition, the resistance to compression from this cause would be very small. If, however, the fluid were on the point of changing its state to that of solidity, the effect of the latent heat of fusion which by hypothesis could not be emitted, would interpose a resistance of great magnitude compared to that resulting from simple compression. The fused matter of which the interior of the earth most probably consists, would be under conditions similar to those mentioned, from the slow conducting power of the materials composing the earth, and from the pressure of all the outermost strata of equilibrium of the fluid upon those near the centre, and thus the influence of pressure in promoting solidification would be less than at its surface.

'On the Plasticity of Ice,' by Mr. JAMES THOMSON.—Mr. Thomson commenced by stating that to Prof. James Forbes is to be attributed the discovery that the motion of glaciers down their valleys depends on a plastic or viscous quality of the ice. He (Mr. Thomson) had formed a theory to explain the nature of this plasticity, and the manner in which it originates. He had been led to his speculations on this subject from a previous theoretical deduction at which he had arrived, namely, that the freezing point of water, or the melting point of ice, must vary with the pressure to which the water or the ice is subjected, the temperature of the freezing point being lowered as the pressure is increased. His theory on that matter* led to the

* This theory is to be found in a paper by the author, entitled 'Theoretical Considerations on the effect of Pressure in Lowering the Freezing Point of Water,' published in the 'Transactions of the Royal Society of Edin.' vol. xiv. Part v. 1849, and also re-published in the 'Cambridge and Dublin Mathematical Journal' for Nov. 1850, Vol. v. p. 248.

conclusion that the lowering of the freezing point for one additional atmosphere of pressure must be 0·0075° centigrade, and that the lowering of the freezing point corresponding to other pressures must be proportional to the additional pressure above one atmosphere. The phenomena which he thus predicted, in anticipation of direct observations, were afterwards fully established by experiments made by his brother, Prof. William Thomson, of which an account was published in the 'Proceedings of the Royal Society of Edinburgh for Feb. 1850.'—Having thus laid down as a basis the principle of the lowering of the freezing point of water by pressure, Mr. Thomson proceeded to offer his explanation, derived from it, of the plasticity of ice at the freezing point, as follows :—If to a mass of ice at 0° centigrade, which may be supposed, for the present, to be slightly porous, and to contain small quantities of liquid water diffused through its substance, forces tending to change its form be applied, whatever portions of it may thereby be subjected to compression will instantly have their melting point lowered so as to be below their existing temperature of 0° centigrade. Melting of those portions will therefore set in, throughout their substance, and this will be accompanied by a fall of temperature in them, on account of the cold evolved in the liquefaction. The liquefied portions being subjected to squeezing of the compressed mass in which they originate, will spread themselves out through the pores of the general mass, by dispersion from the regions of greatest to those of least fluid pressure. Thus, the fluid pressure is relieved in those portions in which the compression and liquefaction of the ice had set in, accompanied by the lowering of temperature. On the removal of this cause of liquidity, the fluid pressure, namely, the cold, which had been evolved in the compressed parts of the ice and water, freezes the water again in new positions, and thus a change of form, or plastic yielding of the mass of ice to the applied pressures, has occurred. The newly-formed ice is at first free from the stress of the applied forces, but the yielding of one part always leaves some other part exposed to the pressure, and that part, in its turn, melts and falls in temperature; and, on the whole, a continual succession goes on, of pressures being applied to particular parts—liquefaction occurring in those parts accompanied by evolution of cold,—dispersion of the water so produced in such directions as will relieve its pressure,—and re-congelation, by the cold previously evolved, of the water on its being relieved from this pressure. The cycle of operations then begins again, for the parts re-congealed, after having been melted, must, in their turn, through the yielding of other parts, receive pressures from the applied forces, thereby to be again liquefied, and to proceed through successive operations as before. The succession of these processes must continue as long as the external forces tending to change of form remain applied to the mass of porous ice permeated by minute quantities of liquid water. The ice is thus shown to be incapable of opposing a permanent resistance to the pressures, and to be subjected to gradual changes of form while they act on it; or, in other words, it has been shown to be possessed of the quality of plasticity. In the foregoing, I have supposed the ice under consideration to be porous, and to contain small quantities of liquid water diffused through its substance. Porosity and permeation by liquid water are generally understood, from the results of observations, and from numerous other reasons, to be normal conditions of glacier ice. It is not, however, necessary for the purposes of my explanation of the plasticity of ice at the freezing point, that the ice should be, at the outset, in this condition; for, even if we commence with the consideration of a mass of ice perfectly free from porosity, and free from particles of liquid water diffused through its substance, and if we suppose it to be kept in an atmosphere at or above 0° centigrade, then, as soon as pressure is applied to it, pores occupied by liquid water must instantly be formed in the compressed parts, in accordance with the fundamental principle of the explanation which I have proposed —the lowering, namely, of the freezing or melting point, by pressure, and the cognate fact, that ice cannot exist at 0° centigrade under a pressure exceeding that of the atmosphere. I would further wish to make it distinctly understood, that no part of the ice, even if supposed at the outset to be solid, or free from porosity, can resist being permeated by the water squeezed against it from such parts as may be directly subjected to the pressure; because, the very fact of that water being forced against any portions of the ice supposed to be solid, will instantly subject them to pressure, and so will cause melting to set in throughout their substance, thereby reducing them immediately to the porous condition. Thus it is a matter of indifference, as to whether we commence with the supposition of a mass of porous or of solid ice. Mr. Thomson then referred to an experiment made by Prof. Christie, late Secretary to the Royal Society, showing the plasticity of ice in small hand specimens, and also to more recent experiments by Prof. Tyndall to the same effect, and very interesting on account of the striking way in which they exhibit the phenomena. He also stated that another very important quality of ice was brought forward by Faraday in 1850—[see *Athen.* No. 1181]. It was that two pieces of moist ice will consolidate into one on being laid in contact with one another, even in hot weather. The theory he had just propounded, he said, afforded a clear explanation of this fact as follows :—The two pieces of ice on being pressed together at their point of contact, will, at that place, in virtue of the pressure, be in part liquefied and reduced in temperature, and the cold evolved in their liquefaction will cause some of the liquid film intervening between the two masses to freeze. It is thus evident, he added, that by continued pressure fragmentary masses of ice may be moulded into a continuous mass; and a sufficient reason is afforded for the reunion, found to occur in glaciers, of the fragments resulting from an ice cascade, and for the mending of the crevasses or deep fissures which result occasionally from their motion along their uneven beds.

'A Mathematical Investigation of the Proportion between the Length required for an Electric Telegraph Cable and its Specific Gravity,' by Captain BLAKELY.—The author showed, by the principles of the composition of motion, as a telegraph wire was payed out from a ship, the velocity which gravity would give it would soon become uniform by the resistance of the water as its parts descended; therefore, the descending part of the cable from the advancing ship to the part of the cable which had reached and was supported upon the bottom, and which he showed in very deep water, say two miles or more, might stretch back six or more miles from the ship. Now, unless a great strain were kept on the brake in the ship where the cable was paying out, a strain which in the case of the Atlantic cable had caused it to part, it was obvious from this demonstration that there must always be what the sailor termed "slack" in the cable when it reached and lay on the bottom, for the inclined length of the rope was always longer than the horizontal length of the bottom on which it was intended to lie. The author then proceeded to estimate, by mathematical formulæ, and numerically, the exact proportion of these in several supposed depths of soundings, rapidity of paying out, and specific gravity of the cable, and came to the conclusion, that the only way of lessening an evil, which must never be expected to be entirely got rid of, was by increasing the speed of the vessel paying out the cable, and diminishing the specific gravity of the cable itself, so as that it should sink gently to its final position.

Mr. JAMES THOMSON did not concur in the view taken by the author, as he conceived that in the method he proposed the cable would be apt to sink in festoons: a bend when once formed by its superior weight dragging down more rapidly than the parts on each side, yet horizontal, and thus the cable would have large folds, or even coils, when it reached the bottom.

During the conversation which arose in the Section after the reading of this communication, a new light seemed to break upon the Members, as it seemed to be universally admitted that it was mathematically impossible, unless the speed of the vessel from which the cable was payed out could be almost infinitely increased, to lay out a cable in deep waters (say two miles or more) in such a way as not to require a length much greater than that of the actual distance, as from the inclined direction of the yet sinking part of the cable, the successive portions payed out must, when they reached the bottom, arrange themselves in wavy folds; since the actual length is greater than the entire horizontal distance. The fact, therefore, which, when noticed, led to the increasing of the strain on the Atlantic cable until it broke ought to have been anticipated, and must be provided for in the future progress of that great national undertaking.

'Account of an instance of Converging Rays seen at Greenisland, on the Antrim Shore, of Belfast Lough, August 13, 1857,' by Mr. J. J. MURPHY.—At about 6 P.M., after a thunderstorm—which was the second on that day—a rainbow was formed. The phenomenon to be described was seen about the left-hand part of the rainbow. The sky outside the rainbow was of that purple black which accompanies thunderstorms. Inside, it was lighter, and diversified by alternate dark and bright rays, like those of an aurora, which appeared to converge to a point a little above the centre of the rainbow, but below the horizon. These rays fluctuated like those of an aurora, but much less rapidly,—their changes being scarcely quick enough to be visible. The dark rays extended into the rainbow, almost blotting it out where they crossed it. The rays were continued outside the rainbow at the period of their greatest intensity, but not all the time, and were never so distinct outside as inside. The dark rays were of the same purple-black colour as the sky outside the rainbow; the light rays were like what we call "watery sunshine." This appearance lasted in all about three-quarters of an hour. The light rays began to disappear one by one from the horizon upward,—the dark ones being welded together into a mass of purple darkness, which, as it ascended, blotted out the rainbow. In this way the lower part of the rainbow and the rays disappeared. The upper part of both disappeared by vanishing,—the rays being the last completely to disappear. After this, there was some thunder and much rain. Another rainbow was formed during the evening, which did not contain any rays, but resembled the former in having a dark sky outside and a light one inside.

THURSDAY.

SECTION B.—CHEMICAL SCIENCE.

President—Dr. APJOHN.

Vice-Presidents—Prof. ANDREWS, Prof. DAVY, Rev. W. V. HARCOURT, Prof. MILLER, Dr. LYON PLAYFAIR, Prof. WILSON.

Secretaries—Dr. GLADSTONE, Prof. SULLIVAN, Dr. DAVY.

Committee—Dr. Aldridge, Dr. Becker, Prof. Bolsani, Prof. Daubeny, M. Donovan, Dr. Edwards, Lord Otho Fitzgerald, D. Forbes, G. C. Foster, A. Gages, J. P. Gassiot, Dr. Geoghegan, Dr. Gilbert, Prof. Haughton, Dr. Head, G. Löwe, Dr. Liveing, Dr. Macadam, Prof. Mallet, Dr. Moore, the Abbé Moigno, Dr. Odling, Dr. Pugh, Prof. Rodgers, Prof. Rowney, W. S. Ward, Prof. Voelcker, Dr. Williams, Dr. Woods, J. Young.

'On the Presence of several Acids of the series $C^n H^n O^4$ among the Products of the Distillation of Peat,' by Prof. W. K. SULLIVAN.—Prof. Sullivan stated, that he first observed the presence of butyric acid in the acetic acid prepared from peat, about five or six years ago, but had not an opportunity of examining the subject further until recently, when he became possessed of a large quantity of raw products of peat, which he hoped gradually to investigate. The process of separating the acids, and the result of the analysis of some of the compounds of each, were described. The salt of baryta, which was obtained with butyric acid, contains four equivalents of water, and, therefore, corresponds with one of Chancel's salts. The tendency of butyrite of baryta to crystallize in the anhydrous form was remarked and the great difficulty of obtaining the hydrate ones, which accounts for Lerches having always obtained that salt as an anhydrous compound.

'On Ozone,' by Prof. T. ANDREWS.—Prof. Andrews read an interesting communication on the action of heat upon ozone, with some observations on the occurrence of that body in the atmosphere.

'On the Proportion of Organic Phosphorus in Legumin,' by Dr. VOELCKER.

'On the use of the Prism in detecting Impurities,' by Dr. GLADSTONE.—This paper described

the novel use of the prism in detecting impurities. The author described the methods of examining substances by means of a prism, especially the instructive results obtained with liquids when the ray of light traverses them in a wedge-shaped vessel. He suggested this as a means of detecting coloured impurities when they do exist, and of proving their absence when they are wrongfully suspected. He showed the value of the means in respect to coloured confectionery, tea, and mustard, and remarked on its use in examining wines, liqueurs, pigments used in the fine arts, gems, pharmaceutical preparations, &c. He stated that the prism and hollow wedge were already used as a commercial means of ascertaining the purity of certain substances.

FRIDAY.

'On Hygrometers and Hygrometry,' by Mr. M. Donovan.

'On the Chemical Composition of an Ancient Iron Slag from Argyleshire,' by Mr. J. Kyle.

'On Electro-Chemistry,' by Prof. W. A. Miller.

'On a Method of Refining Sugar, by Dr. Daubeny.—Dr. Daubeny gave an account of a new method of refining sugar, conducted at Plymouth by Mr. Oxland, and known by his name. It consists in the adoption of the superphosphate of alumina in conjunction with animal charcoal, as a substitute for the albumen usually employed for that purpose. In both cases the object is to separate and carry down the various impurities which colour and adulterate the pure saccharine principle present in the syrup expressed from the cane or other vegetable which supplies it. As, however, bullocks' blood is the material usually procured for the purposes of supplying the albumen, a portion of uncoagulated animal matter, together with certain salts, is left in the juice in the ordinary process of refining, which impairs its purity and promotes its fermentation—thus occasioning a certain loss of saccharine matter to result. Nothing of the kind happens when the superphosphate is substituted, and so much more perfect a purification of the feculent matters, under such circumstances, takes place that several varieties of native sugar, which, from being very highly charged with feculent matters, are rejected in the ordinary process of refining, are readily purified by this method. The employment of superphosphate of alumina also gets rid of so much larger a proportion of the impurities present in the sugar, that much less animal charcoal is subsequently required for effecting its complete defæcation than when bullocks' blood has been resorted to. The quantity of superphosphate necessary for effecting the object is, for ordinary sugars, not less than twelve ounces to the ton; whereas, for the same quantity, as much as from one to four gallons of bullocks' blood is found to be required. Dr. Daubeny suggested that this re-agent might be advantageously resorted to not only in the purification of sugar, but also in other processes of the laboratory, when the removal of foreign matters, intimately mixed with the solution of a definite component, becomes a necessary preliminary in its further examination.

'On Electrical Currents in the Earth's Surface,' by Mr. A. H. Hamilton.

THURSDAY.

SECTION C.—GEOLOGY.

President—Lord Talbot de Malahide.
Vice-Presidents—Dr. Griffith, Prof. Haughton, J. B. Jukes, T. Oldham, Col. Portlock.
Secretaries—Prof. Harkness, G. Saunders, R. H. Scott.
Committee—Sir J. Alexander, R. G. Austin, J. M'Adam, E. W. Binney, J. S. Bowerbank, Dr. Black, A. Brady, W. H. Bailey, R. Chambers, R. Caldwell, Dr. Croker, Rev. Prof. Crolly, G. V. Du Noyer, Rt. Hon. Earl of Enniskillen, D. Forbes, R. W. Fox, W. Gray, W. Hopkins, H. H. Howell, R. Hutton, T. Hutton, J. Kelly, Prof. De Koninck, Prof. King, R. Mallet, Prof. J. R. Mallet, W. Murray, D. M'Causland, Dr. Melville, Prof. Macdonald, D. Page, W. Peace, W. Pengelly, Prof. Phillips, Prof. H. D. Rogers, Prof. W. B. Rogers, Rev. W. S. Symonds, Prof. Scouler, Dr. Sydney, Herr R. Schlagintweit, Herr H. Schlagintweit, Prof. Thompson, Rev. H. Wood, E. Wood, J. Yates.

Mr. Jukes exhibited and described so much of the one-inch Geological Map of Ireland as is published, or on the point of publication.

'On the Woodocrinus, a genus of Crinoidea, from the Carboniferous Limestone of Yorkshire,' by Prof. De Koninck.

Prof. Harkness exhibited the Spine of an Echinus, said to be from the Lower Carboniferous limestone near Cork.

Prof. Phillips doubted the fact of the fossil having been found in the formation mentioned, but suspected it had become mixed with fossils from the Lower Carboniferous series.—Prof. De Koninck agreed with Prof. Phillips in these views.

'Report on the Temperature of some deep Mines in Cornwall,' by Mr. R. W. Fox.—Mr. Fox gave a tabular statement of the result of his observations. He said that in the case of the Tresarcan mine the depth had been increased 540 feet between 1837 and 1853, and the temperature had increased 8° 5 in the deepest level, or in the ratio of 1° in 63·5 feet. Mr. Fox drew attention to these numbers as one of the most interesting facts which had come under his observation.

'The Quartz Rocks, Mica Schists, and Crystalline Limestones of the North-West Highlands of Scotland proved to be of Lower Silurian date by some recent discoveries of fossils by Mr. C. Peach; with a Note by Mr. Salter,' by Sir R. I. Murchison.—Mr. J. B. Jukes, in the absence of Sir R. I. Murchison, read that gentleman's communication. The opinion stated by Sir R. I. Murchison to the meeting in Glasgow as to the age of the above rocks had been confirmed by Mr. Peach's discovery of fossils in them similar to those found in the "calciferous sand rock" of America, which immediately overlies the Potsdam sandstone. This is in harmony with the fact of American types appearing in the Lower Silurians of Scotland and Ireland, which are not known in England and Wales. The author was confirmed in his belief of the probable Lower Silurian age of the mica schists, quartz rocks, and altered limestones of Connemara.

The Rev. Mr. Symonds remarked that Hugh Miller searched for fossil fishes in the nodules from a rock, coloured as Old Red Sandstone, in the island of Skye, but he was evidently inclined to rank them as lower beds. Sir R. Murchison's idea of these rocks is, that they are Lower Silurian, or, perhaps, Cambrian, and in this Sir Roderick differs from Prof. Nichol. As far as the fossils go, the rocks belong to the Lower Silurian age, but the fossils are rather obscure. Hugh Miller probably would have now agreed with Sir Roderick on the point to which this paper refers—viz., the physical position of the quartzites of West Scotland.—Prof. Haughton exhibited some specimens. One of the specimens exhibited a singular structure, the central column being placed near the outer edge, and twining round the stem in a spiral manner. All the other stems shown contained the central vascular bundle in its usual position. He considered these plants to be closely allied to Stigmaria, found in similar deposits in Donegal and Mayo.—Prof. Phillips wished to express his obligations to Mr. Haughton for the interesting facts he had laid before the Section. He conceived it highly probable that in Mr. Haughton's specimens, the spiral structure may be due to a climbing plant surrounding another, and that in fact there are the remains of two plants in the fossil. There were climbing plants formed in the coal-measures. Prof. Phillips thought it possible that further examination of other specimens would enable Prof. Haughton to add further discoveries in regard to the curious structure in question.

'Remarks on some Fossil Plants from the Yellow Sandstones of Hook Point, County of Wexford,' by the Rev. Mr. Haughton.

'On the Records of a Triassic Shore,' by Prof. Harkness.—The area occupied by the trias strata referred to occurs in the north-west of England and the south of Scotland. The deposits which form this series consist of argillaceous strata and sandstones, and these beds have their surfaces marked by ripples, which have resulted from the action of the wind on shallow water. Ripples of another character also occur, and these have been produced by the influence of small rills traversing a muddy shore. Tracks which have originated from the wanderings of crustaceans likewise make their appearance on the surface of the sandstones, and with these are found associated the sinuous tracks of annelids, as well as the pitted hollows which form the entrances into the burrows of these animals. Pseudomorphic crystals of salt are also exhibited in the state of small pyramidal elevations on the under sides of the sandstones, affording evidence of natural salt-pans on this Triassic shore. Small pittings mark in many instances the faces of the sandstones, and the surfaces reposing upon these pitted faces manifest little dome-like elevations. These have arisen from the effect of raindrops, in most instances of a small size, resulting from fine rain; in some instances, however, oblong impressions make their appearance, and they are the results of heavy drifting rain. All the physical conditions on these ancient shores are such as we find under favourable circumstances on the sandy and muddy coast of our present seas.

'On a New Species of Eurypterus from the Old Red Sandstone of Herefordshire,' by the Rev. W. S. Symonds.—This fossil was discovered by the parish clerk of Rowlstone, Herefordshire, and presented to the Rev. W. Wenman. Mr. Symonds examined the correlation of the rocks in which the fossil was found, and stated that they were grey sandstones of the upper cornstones, and which pass upwards into red and chocolate-coloured sandstones and the Old Red conglomerate. The Eurypterus is a Silurian fossil of the lower tilestones, found by Mr. Banks associated with Pterygotus, Pteraspis, and Himantopterus at Kington, and again in the upper tilestones of Kidderminster, by Mr. Roberts, with *Cephalaspis Lyelli*, *Parka decipiens*, and *Pteraspis ornatus*. *Eurypterus pygmæus* is found with the *Lingula cornea*, but the large form of that crustacean now about to be described by Mr. Salter is a different and entirely new species.

Prof. Phillips observed upon the interesting nature of the problem of the discovery of this new fossil in a rock immediately succeeding the Upper Silurian rock, containing peroxide of iron. The author had proved the continuance of organic life in a series of rocks, probably two thousand feet higher than had hitherto been found in the particular geological period to which his paper referred. Each day the limit of our knowledge extends, and very few important theories can be based upon the occurrence of any particular fossil. In determining the classification of rocks by the fossils, crustaceans are good and to be depended on, and so are fishes; the former especially are particularly delicate in their breathing organs, and the red oxide of iron would be fatal to their existence, and therefore a high degree of importance is to be based on the occurrence of any of those orders of either fish or crustaceans in rocks. A really certain and well-defined shell will enable us to determine the age of a rock with certainty—fossils distinctive of the Palæozoic are not to be found in the Carboniferous strata; no absolute demarcation between the Silurian and the Old Red Sandstone exists. A gradual change of organic life is apparent from one to the other, but a greater change in the physical conditions is observable. To discover a fossil of that magnitude in a country searched with the greatest care is of great importance, and it is likely that some more will be discovered in the rocks from which it came.

'On the Junction of Slates and Granite of Killiney Hill,' by Mr. Du Noyer.—Mr. Du Noyer called attention to the way mica schist and granite were intermingled with each other near their line of junction, giving them the appearance occasionally of interstratification, but showing that this appearance was fallacious, and was the result of masses of the mica schist being caught up in shallow hollows of the granite, and dipping down into them as if passing under some of the projecting tongues of granite. He also called attention to some curious arrangement of the mica in portions of the granite adjoining the slates, and brought forward some interesting facts relating to the veins of granite and eurite traversing both the granite and the slates.

'Notices of the recent advances of Palæontological Discovery in the Tuscan Territory,' by Cavaliere G. Meneghini.

FRIDAY.

'Notes on the Rocks below the Base of the Carboniferous Rocks of Ireland,' by Dr. Griffith.—These rocks occur in three districts in the North, viz., at Pomeroy, at the Curlew Mountains in Sligo, and at the Croagh Moyle Mountains in Mayo, and in one large district in the South, viz.,

in Cork and Kerry. The author referred to his papers read at the Cork and Belfast Meetings, in which he connected the conformable brownish-red sandstones and conglomerates with the Silurians, and also to the advice given him by Sir H. De la Beche and Mr. Jukes, as to the omission of the so-called Old Red Sandstone district on his map, as these rocks appeared to them to be carboniferous—an opinion borne out by the subsequent discovery of vegetable remains in the area. He stated the grounds of his classification of the yellow sandstone, and was not prepared to deny that the fish-beds of Scotland and the similar rocks of South Wales were carboniferous. He referred to several sections, and remarked on the difficulty experienced from the red and green rocks (called by Mr. Jukes "Glengariff grits"). These rocks are at Dingle conformable with the Silurians, but not with the Old Red Sandstone; whereas to the south of Dingle they pass up gradually into the Old Red Sandstone. He concluded by stating, that he considered that he was justified in calling these rocks Silurian, and, therefore, introducing different letters and colours on his map.

'On the Geological Structure of the Dingle District,' by Messrs. JUKES and DU NOYER.—The object of this paper was twofold:—First, to describe the very curious structure of the Dingle Promontory, composed of Upper Silurian (Wenlock and Ludlow) rocks on the extreme west of the promontory, overlaid by rocks 10,000 or 12,000 feet thick, called Glengariff grits and Dingle beds, chiefly green and purple grits and conglomerates, with red slates and some calcareous bands (cornstones). These were surmounted quite unconformably by 3,000 feet of red sandstones and conglomerates passing up conformably into the base of the carboniferous limestone. The complicated positions of these rocks were explained by a large coloured map and a series of sections. Secondly, to point out the bearing of these facts on the nomenclature of these rocks. If the term "Old Red Sandstone" be confined to the overlying unconformable red sandstone, that formation must be taken as the base of the great carboniferous system. There was no doubt as to the Upper Silurian, and it follows that the Glengariff grits and Dingle beds must either be considered of Devonian age, and the terms "Devonian" and "Old Red" no longer considered synonymous, or some new term must be invented for them.

'On the Old Red Sandstone of South Wales,' by Prof. JUKES.

Prof. J. R. MALLET, of the University of Alabama, exhibited the Section and Geological Map of that State, recently prepared by the late Prof. Tuomey to accompany his Report on the State Survey. The principal geological features of the country were noticed, and the resulting peculiarities of soil and economic advantages briefly alluded to.

'On the Iron-stone Bands in the Oolites of Yorkshire,' by Prof. PHILLIPS.—He exhibited a large section of the strata referred to, and pointed out the great amount of difference between the strata of the Oolite period as seen in Yorkshire and in the south of England. He pointed out the range of geological time which included these differences,—viz., the period of the Bath Oolite, and traced the peculiarities of the distribution of the coal and ironstone, by which the Yorkshire series is distinguished. He mentioned facts showing the amazing abundance of the occasionally magnetic-iron ore in the district, amounting in some cases to more than twenty feet in thickness in one mass, and yielding at this moment about one million tons per annum.

Mr. JAMES YATES exhibited a fossil cone, probably from the green-sand formation, and explained the appearances which prove that it belonged to the proper Coniferæ, illustrating his statement by producing specimens of cones belonging to the Cycadeæ.

The PRESIDENT exhibited another cone from the lower Oolite, in the south of England, which, in the opinion of Mr. Yates, belonged to the Cycadeæ.

'On the Geology of the Galty Mountains, &c.,' by Mr. A. B. WYNNE.—Having recently to examine the geology of a large portion of the Galty Mountains from where they rise, out of the low limestone country between Charleville and Buttevant at the west, to where they terminate in it again at Caher to the east, together with parts of the adjacent counties, I have been enabled to construct a nearly north-and-south section across the summit of Galty More from an outlier of the coal-measures on the south, through the carboniferous limestone, Old Red Sandstone, and Silurian, to the limestone of the Glen of Ahelow on the north. And this section may be regarded as typical of the geological structure of the lofty range of the Galty Mountains. The Lower Silurian, occupying chiefly a large hollow in the centre of the mountains, surrounded by hills of varying height, capped with the lower conglomerate of the Old Red Sandstone, is composed of dark-coloured green, olive, red, and purple slates, grits and gritty sandstones generally striking in a nearly east-and-west direction, dipping at high angles, sometimes to the north, sometimes to the south, and often much contorted. Upon and unconformable to it rests the Old Red Sandstone, which, from previously existing irregularities in the surface of the Silurian, or from other causes, seems to have been very unequally deposited, as will be seen by referring to the section, where this formation is represented on the north by somewhat less than half its thickness to the south. It frequently presents fine examples of oblique lamination, and the only traces of organic life which I have met with in it are some small markings of two kinds, probably annelid tracks or fucoids in beds of fine Red Sandstone, near the base of the formation, specimens of which are on the table. The basal bed of the Old Red Sandstone is generally a thick soft conglomerate formed of red grit, pebbles, and fragments of the Silurian in a purple paste, with very few pebbles of quartz. This character is not, however, constant, for it is sometimes found to be a green breccia with some rounded fragments of purple grit, and sometimes a few beds of red sandstone intervene between the conglomerate and the Silurian. Further up in the formation, at about half its thickness, occurs another marked band of conglomerate, the space between it and the basal one being occupied by red grits and sandstones. It is in one place 400 feet thick, and its pebbles are chiefly of quartz in a purple paste. Small and much rounded pebbles of syenite and trap are also found in it, as well as some fragments of green and grey grit. Above this are more red grits, getting paler as they approach the top, and having bands of liver-coloured shale, interstratified with yellowish and coarse grey and greenish sandstone, where the section is thickest. At about 1,200 feet above the last-mentioned conglomerate occur certain beds of purple ferruginous sandstone, having, when weathered, a pitted appearance. And just above them I have drawn the very arbitrary boundary of the yellow sandstone, which, on the southern slopes of the Galtys, may be about 1,200 feet thick. There are just traces of some dark green gritty shales appearing in one or two places, which may be the representatives of the carboniferous slate. The thickness of all the Old Red, including the yellow, sandstone on the south side of the mountains may be in different places from 4,000 to 4,500 feet, while on the north side it is only 2,000 feet thick. The carboniferous limestone is almost quite concealed by drift, and when seen is grey, compact, and sometimes slightly crystalline, containing corals and other fossils, but the Calp division does not appear. Upon it lies a thin outline of the coal measures, shown at the south end of the section, consisting of the lower black carbonaceous shales and thin olive grits, in which a shaft was sunk in the hope of finding culm, but the limestone was reached without success, and the search was then abandoned.

'On a Section across Slieve-na-muck, county Tipperary,' by Mr. JOSEPH O'KELLY.—In this paper, Mr. O'Kelly called attention to, and exhibited, a section across Slieve-na-muck, where an east-and-west fault, with a throw of at least 5,000 feet, brings the coal-measures abutting against the Silurian.

'On the Valentia Trap-District,' by Mr. G. H. KINAHAN.—These traps occur in the "Old Red" formation, and seem to have been contemporaneous with the aqueous beds. On the mainland, and on part of Begenish, they are conformable; and on the rest of Begenish, and on the Island of Valentia, they are unconformable. The lowest place in the formation that they are observed is to the south of Beenakeyraka, where they make their appearance as a dyke. It is then lost under the bog and drift, but is seen again when we go east, at the north of Glanleam, the seat of the Knight of Kerry. On Begenish, and the mainland, we meet with six different volcanic periods. The first is greenish-white compact felstone, which seems to be very local, as it is only met with at one place. Second: greenstone ash, which seems to have been very general, as it is found everywhere but on the mainland. Third: felstone, either blue, black, or greenish. It is generally separated from the last by a bed of altered slate, and has always, except on the mainland, a bed of altered slate on top of it. This bed of felstone is found everywhere that we get a section. Fourth: the great igneous action of the period, which is a greenstone more or less felspathic. The centre of action would seem to have been at the east of Begenish, as here, where the fault is marked, there is an unconformability. It would seem also to have been near this place that the bent of the previous irruptions had taken place, as they are all represented here. The dyke in Valentia would seem to be the feeder that supplied this greenstone. It runs under the Quarry Hill, not making its appearance from Beenakeyraka until you come to the north of Glanleam, where it is lost in the sea opposite the Begenish traps. This bed is also found on the mainland, and can be traced inland for about a mile. In places it is in regular columns, and everywhere has a tendency to be columnar. Fifthly: compact felstone of a dark blue or purplish colour. It is found lying on the top of the greenstone, but dies out as we go east. To the north it is slightly hornblendic, but everywhere else it is a compact felstone. Sixthly: trappean breccia, which lies on the top of the last. It is made up of pieces of all the foregoing traps, along with slates and grits, imbedded in a green matrix. At Laght Point, and at the south-east of Begenish, there is a slight insertion.

'On the Fossils of the Dingle District,' by J. W. SALTER.

THURSDAY.

SECTION D.—ZOOLOGY AND BOTANY, INCLUDING PHYSIOLOGY.

President—Prof. HARVEY.

Vice-Presidents—Prof. ALLMAN, Prof. DAUBENY, A. H. HALLIDAY, Prof. HARRISON, W. OGILBY, Sir J. RICHARDSON.

Secretaries—Prof. KINAHAN, Dr. LANKESTER, R. PATTERSON, Dr. STEELE.

Committee—R. L. Allman, Prof. Archer, W. Andrews, Dr. Baird, J. S. Bowerbank, C. C. Babington, Rev. P. Carpenter, A. Carte, Prof. Corbett, Dr. Corrigan, Dr. Croker, W. C. Domville, Dr. Edwards, A. Furlong, Hon. G. S. Gough, J. R. Green, A. H. Halliday, Dr. Hayden, Rev. R. H. Higgins, Rev. T. Hincks, J. Hogg, Dr. Hughes, G. C. Hyndman, Prof. Jacob, Prof. Lyons, R. M'Andrew, Prof. Macdonald, Prof. Melville, Rev. Dr. Miles, D. Sinclair, Prof. Thompson, E. Waller, E. P. Wright, E. Wright.

Dr. HARVEY, in taking the chair, referred to the fact, that the position he then occupied had been assigned to the late Dr. Ball. He then proposed that the meeting should adopt the following resolution:—"Resolved, that we hereby express our deep regret at the loss we have sustained by the recent sudden death of Dr. Robert Ball, an early and constant supporter of the British Association, and who had been named President of the Natural History Section on the present occasion; and that this tribute of marked respect to his memory is due not merely on account of his great merit as a naturalist and promoter of science, but much more to his personal character as a kindly, high-minded, and honourable man."

Dr. DAUBENY, of Oxford, read the 'Report of the Committee appointed to investigate the Vitality of Seeds.'—He alluded to the circumstances which called the Committee into existence, and stated that after planting year after year all the seeds they were able to collect, they had now left but four species of plants whose seeds continued to grow. These were species belonging to the genera Ulex, Dolichos, Malva, and Ipomœa. He exhibited a register in which every experiment as performed by Mr. Baxter, of the Botanic Garden, was detailed. From this register it would be seen that the shortest period for which any of the seeds

had retained their vitality was eight years, and the longest forty-three years. Grouping the plants according to their natural orders, the following selected will give some idea of the plants whose seeds retain their vitality longest:—Gramineæ, 8 years; Liliaceæ, 10 years; Coniferæ, 12 years; Tiliaceæ, 27 years; Malvaceæ, 27 years; Leguminosæ, 43 years; Rhamnaceæ, 21 years; Boragniaceæ, 8 years; Convolvulaceæ, 14 years; Compositæ, 8 years; Myrtaceæ, 18 years; Umbelliferæ, 8 years; Cruciferæ, 8 years.—Mr. GEORGE EMERSON, of the United States, expressed a doubt of the maize being strictly a plant of the New World, from the fact of its occurrence in the floral decorations in Rome in the time of Raffaelle.—The CHAIRMAN stated, that botanists had always regarded the maize as a plant of the New World, and the evidence that it was so was regarded by Alfonse De Candolle, in his recent work on the geographical distribution of plants, as quite complete.—Dr. DAUBENY replied, that if the maize were a plant of the Old World, they could hardly have failed to use it; and the fact of Raffaelle's painting it, might be accounted for by the interest all products from the New World were regarded with in his time.—Dr. LANKESTER drew attention to the physiological interest of the Report just read. It would appear that the seeds which retained their vitality longest were those which had least albumen surrounding their embryos, as the Leguminosæ, whilst those which had large quantities of albumen, as the Graminaceæ, lost their vitality soonest.—Dr. STEELE stated, that he had planted many seeds obtained from Egyptian mummies, but always failed to obtain any indications of their vitality.—Mr. MOORE, of the Dublin Botanic Garden, related an instance in which he had succeeded in producing a new species of leguminous plant from seeds obtained by Mr. John Ball from a vase discovered in an Egyptian tomb. He also stated that he had picked from out of the wood of a decayed elm, at least fifty years old, seeds of laburnum, many of which had germinated when planted, and produced young trees. He had once grown a crop of young barberry trees by planting a quantity of barberry jam, which proved that the process of preparing the jam did not injure the seed. Many seeds grew the better for being placed in boiling water before they were set.—Dr. DAUBENY stated, that seeds did not retain their vitality whilst entirely excluded from the air; that, in order to keep them well, they should be wrapped up in brown paper, or some other porous material.—Mr. ARCHER stated, that the seeds sent from China in air-tight vessels always failed to germinate. Some seeds kept much better than others.—Mr. OGILBY stated, that some seeds germinated the better for being kept.—Mr. NEVINS and Mr. MOORE both confirmed this statement, and said that gardeners were in the habit of keeping cucumber and melon seeds in their pockets in order to ensure their more efficient germination.

'On the Employment of the Living Electric Fishes as Medical Shock-Machines,' by Prof. G. WILSON.—The author stated that, in prosecuting researches into the early history of the electric machine, he did not at first contemplate going further back than the seventeenth century, or commencing with any earlier instrument than Otto Guericke's sulphur globe, of 1670. His attention, however, had been incidentally directed to the employment of the living torpedo as a remedial agent by the ancient Greek and Roman physicians, and he now felt satisfied that a living electric fish was alike the earliest and the most familiar electric instrument employed by mankind. In proof of the antiquity of the practice, he adduced the testimony of Galen, Dioscorides, Scribonius, and Asclepiades, whose works proved that the shock of the torpedo had been used as a remedy in paralytic and neuralgic affections before the Christian era. A still higher antiquity had been conjecturally claimed for the electric Silurus, or malapterurus of the Nile, on the supposition that its Arabic name, *raad*, signifies thunder-fish, and implies a very ancient recognition of the identity in nature of the shock-giving power and the lightning force; but the best Arabic scholars have pointed out that the words for thunder (*raad*) and for the electric fish (*ra'ád*) are different, and that the latter signifies the "causer of trembling" or "convulser"; so that there are no grounds for imputing to the ancient Egyptians, or even to the Arabs, the identification of Silurus-power with the electric force. In proof of the generality of the practice of employing the living zoo-electric machine at the present day, the author referred to the remedial application of the torpedo by the Abyssinians, to that of the gymnotus by the South American Indians, and to that of the recently-discovered electric fish (*Malapterurus Beninensis*) by the dwellers on the Old Calabar River, which flows into the Bight of Benin. The native Calabar women are in the practice of keeping one or more of the fishes in a basin of water, and bathing their children in it daily, with a view to strengthen them by the shocks which they receive. These shocks are certainly powerful, for living specimens of the Calabar fish are at present in Edinburgh, and a single one gives a shock to the hand reaching to the elbow or even to the shoulder. The usages referred to appear to have prevailed among the nations following them from time immemorial, so that they furnish proof of the antiquity as well as of the generality of the practice under notice. The author concluded by directing the attention of naturalists to the probability of additional kinds of electrical fish being discovered, and to the importance of ascertaining what the views of the natives familiar with them are in reference to the source of their power and to their therapeutic employment.

Sir J. RICHARDSON stated, that there were not less than eleven genera of fishes known that had the power of giving electric shocks. There was one peculiarity in all these fishes, and that was the absence of scales. In every one of them an apparatus had been discovered, which consisted of a series of galvanic cells put in action by a powerful system of nerves. He read extracts from a letter from Dr. Baikie, now engaged in exploring the Niger, in which that gentleman stated that he had met with an electric fish in Fernando Po, and which Sir J. Richardson believed was identical with the Malapterurus, which had been described by Dr. Wilson, from the coast of Old Calabar. The natives called this fish the Tremble-fish.

Mr. HYNDMAN, of Belfast, read a paper 'On the Results of Dredging,' on the part of the Belfast Committee.—With respect to the Mollusca of Belfast Bay, there is little to add since the comprehensive report of the late William Thompson. The result may be summed up at present as—Bivalves, 94 species; Brachiopods, 2 species; Univalves, 102 species: in all 198 species. In the course of the dredging operations carried on, a submarine ridge, very rich in number of shells, was discovered, known to the fishermen as the Turbot Bank, and extending from the Isle of Muck, across the entrance of Belfast Bay, towards the Copeland Islands, lying in from 25 to 30 fathoms, composed of coarse rolled pebbles on the sides and of gravel and shells, more or less broken, on the top. The materials from this deposit having been examined by Edward Waller, Esq., Dr. Dickie, and Mr. Hyndman, the result was given in a list of 191 species obtained, consisting of Bivalves, 83; Brachiopods, 2; Univalves, 106: in all 191, mostly all dead. The list contains *Terebratula caput serpentis, Crania anomala, Scissurella crispata, Adeorbis subcarinata, Propilidium ancyloide, Cerithium metulla*, several of the rarer Rissoas and Odostomias, and also an addition to the list of British shells, *Mangelia Holbollii*, hitherto only found in the Norwegian seas. A deep recess, of from 80 to 100 fathoms, lying near the Maiden Lighthouses, off the entrance to Larne Lough, has been partially explored, with the expectation that several of the rarer deep-water species enumerated might have been found living, but none have yet been discovered, except *Terebratula caput serpentis, Crania anomala*, and *Propilidium ancyloide*; so that further examination is required in that direction. Portions of the shell sand from the various dredgings had been forwarded to Prof. Williamson, of Manchester, and a list was furnished by him of the Foraminifera obtained, amounting to 24 species and varieties. The zoophytes were put into the hands of Prof. Wyville Thomson, who gave a list of the species, including two undescribed forms of Sertularia. A list of the Echinodermata of Strangford Lough and the channel adjacent was received from Dr. Dickie, comprising 24 species, among which was the rare *Brissus lyrifer*, not previously obtained in the north of Ireland.

Mr. R. PATTERSON, of Belfast, read a Report from Dr. Dickie 'On the Results of Dredging in Strangford Lough.'—One hundred species (dead or living) were dredged, viz. 57 Bivalves, and 43 Univalves. The locality which yielded the greatest number is near the junction of the narrow channel (half a mile broad by three in length) with the wider part of the Lough, viz. Castle Ward Bay, the proportions being:—Bivalves: living, 29; dead, 17;—46 species. Univalves: living, 22; dead, 29;—51 species. Two miles further up, and five or six miles from the open sea, the numbers dredged were:—Bivalves: living, 10; dead, 22;—32 species. Univalves: living, 10; dead, 8;—18 species. Being about half the number in the former locality. In the wider part of the Lough, still further from the sea, the numbers were:—Bivalves: living, 21; dead, 5;—26 species. Univalves: living, 8; dead, 5;—13 species. Giving a total of only 39 species. In the open sea, opposite to the entrance of the Lough, the dredge afforded proof of very regular distribution of materials to a distance of seven miles from the bar, as follows:—First, from the bar to a mile, more or less, distant, large and small stones intermixed; secondly, two miles from bar, more or less, gravel, small stones, and shell sand; thirdly, three miles from bar, gravel, dead and living shells; fourthly, four to five miles from the bar, sand and mud, with dead and living mollusca; fifthly, six miles from bar fine mud and sand, with fine mollusca; sixthly, seven miles from the bar fine black tenacious mud, with one living bivalve, viz. *Syndoringa intermedia*, and *Brissus lyrifer*. The powerful currents (nine miles in the hour) which issue from the narrow entrance of the Lough in some measure account for this distribution of the materials at the bottom. In these different zones 89 species were dredged, viz.—Bivalves: living, 31; dead, 24;—55 species. Univalves: living, 11; dead, 23;—34 species. On taking a general review of the Molluscan Faunæ of Strangford Lough, and of part of the Irish Channel immediately opposite, we remark the absence of species belonging to Lusitanian and South British types, and the general occurrence of those of the European type, with a large proportion of those called Celtic. Some of those considered as more peculiarly British are also plentiful, as *Trochus Montagni, T. millegranus, Pecten tigrinus*, and *P. striatus*. Those of the Atlantic type are generally rare; the Arctic type being but very partially represented. The general conclusion therefore is, that the mollusca recorded here belong mainly to the European and Celtic types, with a moderate proportion belonging to the Atlantic, and a very few Arctic forms.

Prof. W. THOMSON remarked on the importance in dredging operations of stating whether the specimens obtained of Sertularian Zoophytes were male or female.

Mr. PATTERSON exhibited living specimens of *Virgularia mirabilis* obtained from Belfast Lough.

Prof. MACDONALD made a communication 'On the Cranium of Osseous Fishes, and its Vertebrate and Articulate Homologies.'

Dr. MELVILLE gave an account of his views of the homologies of the human vertebrate skeleton, and reasons for differing from Prof. Owen with regard to the real origin of the hind and fore extremities in the vertebrate division of animals.

Mr. HOGG exhibited specimens of British plants.—1. A large variety of *Astragalus hypoglottis*. 2. A paniculated variety of *Plantago major*. 3. A large-leaved variety of *Arbutus Unedo*.

The Rev. F. O. MORRIS read a paper 'On the Specific Distinctions of *Uria Troile* and *Uria lacrymans*.'

FRIDAY.

Prof. KINAHAN read a notice of a new species of Galathea, which combined many of the characters of the genera Munida and Galathea as at present constituted, possessing the elongate slender claws of the former, and the flattened broad rostrum of

the latter. This new species in characters is intermediate between the three known species. Prof. Kinahan had named it *Galathea Andrewsii*.

Mr. R. Patterson read the following note of the quantity of periwinkles (*Litorina litorea*) shipped at Belfast during the years 1853, 4, 5, and 6. It had been kindly furnished to him by Edmund Getty, Esq., Secretary to the Harbour Commissioners of that port.

	Bags.	Tons.	Bushels.
1853	1,034	181	3,102
1854	2,626	459½	7,878
1855	2,286	400	6,858
1856	786	137	2,358

Such of these as are not got in the Bay of Belfast, are principally collected on the coasts of the County Down; but the "banks" from which they have been derived are becoming exhausted, and no longer capable of supplying the demand. The quantity of periwinkles deficient is now imported from Stranraer to Belfast, and thence re-shipped for London. The local term in the north of Ireland for the periwinkle is "whelk." The "whelk" (*Buccinum undatum*) is known as the "buckie."

The reading of this paper led to a general conversation on the subject of the habits of marine animals used as food, and the methods of their conservation.—Mr. Patterson, of Belfast, stated that fishermen were generally ignorant of the simplest fact connected with the habits of the animals they caught, and stated as an illustration, that at Belfast one party of fishermen swore before a court of law that flat-fish deposited their spawn on the shore, whilst another party swore equally hard that they went out to sea to deposit their spawn.—Prof. Kinahan stated that a frequent cause of the destruction of the crustacea on our coasts was the occurrence of either great heat or cold at the period of the hatching of the spawn. The young were hatched in holes and shallow pools on the shore, and either heat or cold killed them.—Prof. Wyville Thompson stated that the laws which regulated the development of animal life were little understood, and that the naturalist must be careful not to promise the fisherman too much.

'On British Naked-eyed Medusæ, with notices of seven undescribed forms,' by Mr. Joseph R. Green.—The author commenced by alluding to the progress which had been made in the study of the Naked-eyed Medusæ since the publication of Prof. E. Forbes's monograph; the researches of Agassiz, Leuckhardt, and Gegenbaur being more especially dwelt on. He next gave a list of the Acalephæ which he had hitherto observed on the Dublin coast, in all amounting to twenty-five species. The Physograda were represented by the beautiful Agalmopsis of Sars. The Ciliograda by two species of Cydippe—one of Beroe and the *Euemia Norvegica*. The Steganophthalmata by all the British species, except Pelagia; and the Gymnophthalmata by thirteen species, six of which were new to science. In addition to the above, two other species of Thaumantias had been taken in Belfast Bay. One the *T. lineata*, the other a new species, which he proposed to name *T. Pattersonii*. The author then proceeded to describe the seven new species which he had discovered. Three of these were referred to the genus Thaumantias, one to Bougainvillea, one to Equorea, one to Steenstrupia, and one was deemed sufficiently remarkable to induce him to establish a new genus for its reception. This last animal was particularly interesting, since it was, in all probability, identical with the medusoids produced from Coryne, as observed in Iceland by Prof. Steenstrup. The author also noticed that in this medusa reproduction took place by germination from the tentacles themselves, as also from the tentacular bulbs. He had observed the latter mode to occur in his new species of Steenstrupia. The development of medusoids from *Laomedea geniculata* was next alluded to: in all the cases which the author had himself observed, the medusoids were free and detached, nor in any instance was he able to corroborate the statement of Loven, "that the medusoids merely expanded at the summit of the 'ovigerous vesicle,' discharged ova, and then perished." He did not, however, wish to deny the correctness of Loven's description. Allusion was also made to the observations of Dr. T. S. Wright and Mr. C. W. Peach. The author concluded by calling the attention of members to the study of this interesting group of animals.

Mr. Patterson congratulated the Association on having obtained so good an observer as Mr. Green in this field of inquiry.—Prof. Wyville Thompson stated it as his conviction, that the naked-eyed Medusæ were truly species, and not medusoid forms of Sertularian zoophytes. The only families of zoophytes producing medusoids with which he was acquainted were the Tubulariadæ and the Campanulariadæ. — The Rev. Thomas Hincks thought that the true nature of the Gymnophthalmatous Medusæ had not yet been demonstrated, and that there was still great reason to believe them medusoid forms of unknown species of zoophytes.

'Notice of a Curious Monstrosity of Form in the *Fusus antiquus*,' by Mr. Hyndman.—The specimen exhibited was obtained during the present summer, by dredging off Groomsport, in the county Down, by Samuel Vance, Esq., and George Murray, Esq., and kindly presented by the former to Mr. Hyndman. Unfortunately, the animal was not preserved, as the specimen was boiled along with a number of other shells, and their contents extracted before the singular form of this shell attracted notice. The author had no doubt, however, in referring to it as a curious and interesting monstrosity of the common *Fusus antiquus*, although its convolute form more nearly resembled that of the foreign genus Delphinula, or of Euomphalus. From the projection of two or three turns of the original apex of the shell, from the centre of the coil, the author considered that the abnormal form had been occasioned by some accident befalling the animal whilst in the young state, which obliged it to change the visual angle of the whorl with the central spire, and that the shell has thus become convoluted as seen.

'On the Dispersion of Particular Breeds of Domestic Animals as connected with the great Ethnological Divisions of Mankind,' by Mr. Ogilby.—The author commenced by stating that the power of domesticating animals appeared to exercise a great influence on the civilization of mankind. Where men had no cattle to attend to or breed, there they always exhibited the most degraded forms of their race. The great object of the paper was to show that certain breeds of sheep had always appeared with particular races of men, and that, at the present day, we had no better guide to the original types of mankind than were afforded by certain races of sheep. The paper was illustrated by maps and diagrams, illustrating the breeds of sheep.

'On the Reproductive Zooids of *Comatula rosacea*,' by Prof. Wyville Thompson.—The author alluded to the history of Comatula, and referred to the fact that the pentacrinal form of this animal was originally regarded as a distinct animal. He had succeeded in dredging this animal, in Belfast Bay, in such a state as to lead him to believe that he had discovered the condition of the animal previous to its assuming its pentacrinal form. He then stated that, in certain stages of the growth of Comatula, he had detected, projecting from the surface of the animal, buds, or zooids, which, on examination, he had found to possess both germ-cells and sperm-cells; and from this were produced the eggs which were subsequently developed into the pentacrinal polyps, from which the mature animal proceeded.

'Observations on the Plants which, by their Growth and Decomposition, form the principal part of the Irish Turf-Bogs,' by Mr. D. Moore.—It was observed that, although much has been written on this subject, and many able reports made on it, strange to say, no one had yet given any intelligible account of the species of plants which enter principally into the formation of the turf-bogs of Ireland, although so large a portion of the surface of the country is covered with them, and bog labour constitutes no inconsiderable item of productive economy in Ireland. The varieties of bog were divided into red bog, brown bog, black or turbary bog, and mountain bog,—which, although not very scientific—these being the names they are best known by—are retained. The differences of colour and consistencies of matter, of which each variety is composed, were considered to depend chiefly on the localities where the substances are produced, according as they vary in different degrees of moisture, temperature, and altitude, whereby the growth and decomposition of vegetables are affected. Iron, and some other mineral substances which are generally found in peat-bogs, had no doubt something to do with the colouring, but the former combination of causes produced the effect principally. By far the greatest portion of the bogs in Ireland consists of the kind called red bog, which varies in depth from 10 to 40 feet, or even more. This variety is the least valuable for fuel, owing to its soft fibrous consistency. It is supposed to have been formed on the sites of extensive ancient lakes, or very wet morasses, which may be inferred from the small quantity of wood found mixed up with it; besides the roots and trunks of trees being mostly found near the edges of the bog, the portions towards the centre being composed of nearly an uniform mass of the *débris* of the list of plants mentioned. It was further stated, that although Sphagnums constitute a large portion of this substance, without the aid of the roots and branches of phanerogamic plants to form a kind of framework to bear up the cryptogamic species, the formation of bog could not go on at nearly so quick a ratio as it does. In the absence of all trustworthy experiments on the growth of bog, the rate of increase could not be well ascertained, but holes out of which turf had been cut had been observed filled up with soft vegetable matter, to the depth of one foot in five years, which, if supposed to be ultimately compressed into one-fourth part that bulk, after being solidified, as near an approach as can be made to the rate of increase of bog at the present day might probably be reckoned on. In limestone districts, where the larger species of Chara abound, whose stems and branches are always thickly incrusted with calcareous substances, the deposition of matter takes place faster than it does where those plants are not so common. The *débris* resulting from *Chara hispida* alone, where it grows freely, will soon fill up a shallow pool, so that plants higher in the scale of vegetation can grow on it. According to the Report of the Commissioners appointed to report on the nature and extent of the Irish bogs, upwards of a million of English acres are covered with red and brown bog, more than two third parts of which are westward of the river Shannon. The variety called black or turbary bog, was next considered in detail, which is the most valuable for fuel, owing to the great quantity of woody matter it contains. This variety is supposed to have been formed on the sites of ancient forests, as is evident from the large quantities of prostrate trunks of trees and their roots, frequently *in situ*, which are found in it. The kinds consist chiefly of *Pinus sylvestris, Quercus robur, Betula alba*, and *Alnus glutinosa*, though large quantities of yew, *Taxus baccata*, and some mountain ash, are also found in particular districts. The roots of the oaks are generally nearest the margins of the bogs, resting on the clay or marl bottoms, whilst the Scotch firs occur further towards the centre, and rest on several feet of peat, thus showing that a considerable accumulation of that substance must have taken place before they vegetated on it. These roots are frequently found one above the other, where they have grown, which has led some to suppose there have been several consecutive and distinct epochs of growth, and that some species of the trees which formed them are not now natives of Ireland. This hypothesis was not considered correct, but rather, that by the gradual growth of the bog, matter accumulated and covered the first tier of roots, and the seeds of contiguous trees on falling and vegetating above them grew and formed in their turn another tier, and so on up to the present surface; as a few of the trees of those ancient forests which once covered so large a portion of Ireland still exist on the Earl of Arran's property at the present time. After the plants which form this variety of bog were enumerated, the kind called mountain bog was next considered, which sometimes accumulates to a great depth on the tops of mountains, at elevations

varying from 1,000 to 2,000 feet. The Sphagnums do not enter so largely into the composition of this kind, but their place is supplied by the grey moss, *Racomitrium lanuginosum*. The conclusions Mr. Moore has come to on this subject are the following, namely, that so far as proofs exist, the same plants which are now forming the bogs of Ireland have done so from the bottom upwards, though probably at different ratios, as drainage has increased, and that all the species are still in existence in Ireland which have ever formed any part of them. These formations he considers to be of a more recent date than the glacial epochs of geologists, with probably the exception of that at Lough Neagh, which may have been anterior to that period, but he thought it would be very hazardous to state the species which formed the fossilized wood found there.

Mr. BABINGTON observed, that the paper just read would do much to clear up a subject of great interest, which hitherto had been but ill comprehended by the English naturalist.

'On the Remarkable Result of Experiments on a Fruit-bearing Tree,' by Mr. N. NIVEN.—In this paper Mr. Niven detailed the result of an experiment of grafting twelve different sorts of pears on the same stock, so that he had obtained fruit from this tree, which ripened and were ready for the table at all seasons of the year.

THURSDAY.

SECTION E.—GEOGRAPHY AND ETHNOLOGY.

President—Rev. Dr. TODD.

Vice-Presidents—Major-Gen. CHESNEY, J. CRAWFURD, Rear-Admiral FITZROY, Dr. HINCKS, Rev. Dr. WALL, W. R. WILDE.

Secretaries—R. CULL, S. FERGUSON, Dr. MADDEN, Dr. NORTON SHAW.

Committee—Sir J. Alexander, Dr. Anster, J. A. Baker, J. B Barker, R. Beamish, W. Beaufort, W. G. Blackie, C. H. Bracebridge, Dr. Burchell, Rev. Dr. Butcher, Lieut. Chimmo, D. Croker, E. Curry, J. T. Gilbert, J. Grattan, R. Hepburn, Rev. H. H. Higgins, W. H. Hovell, J. Hogg, C. Haliday, D. Laing, Lieut.-Col. Larcom, Capt. Leach, Dr. Lee, Rev. Dr. Livingstone, J. Macdonnell, Prof. W. Macdonald, Capt. Maguire, C. R. Markham, Sir C. Nicholson, Dr. O'Donovan, W. Ogilby, Lord Radstock, Sir J. Richardson, Rev. Dr. Russell, A. R. St. Leger, S. Siegfried, Rev. Dr. Smith, J. H. Smith, Lieut.-Col. Smythe, Prof. Sparks, Rev. T. Stack, J. K. Watts, J. Yates.

'On the Characteristics, Physical and Moral, of the Gaels of Ireland and Scotland,' by Dr. J. O'DONOVAN.—The author said:—It is now universally admitted by the learned that the Geadhil, or ancient inhabitants of Ireland and of the Highlands of Scotland, and the Cymri, or Ancient Britons, are the descendants of the Celtæ of Gaul, and retain dialects flowing from the language of that people. The invariable tradition of the Gaedhil themselves is, that they came from Spain into Ireland. The earliest writer who mentions the Celtæ is Herodotus, who flourished about 413 years B.C. He states that the Celtæ and Cynetæ dwelt in the remotest quarters of Europe, towards the setting sun; but the most copious and valuable account of them is contained in Cæsar's 'Commentaries on the Gallic War,' in which they are described as a numerous and warlike people, who occupied nearly one-half of Gallia. A colony of the same people occupied a great part of the north of Spain, where they were called Celtiberi, having crossed the Pyrenees from Gaul, and settled at first on the river Iberus, or Ebro. These, who were probably the ancestors of the Celtæ or Geadhil of Ireland, are described as the most powerful and warlike of all the tribes of Spain. Cæsar says that the people called Celtæ in their own language, were styled Galli in the Roman or Latin tongue, but nothing is to be found in the Commentaries to throw any light upon this difference of name. The probability, however is, that the Romans called them Galli, *i.e.* "Cocks," from their pomposity and courage; though some think that Galli was but the Romanized pronunciation Celta. Tacitus, in his 'Life of Agricola,' stated that there was very little difference between the soil and climate, the religious worship and dispositions of the inhabitants of Ireland and those of Britain. Dr. O'Donovan then enumerated a number of ancient Gaulish words that had been preserved by classic writers, and that afford strong grounds for believing that the language was a kindred one with the original dialects of the British Islands. The name of the Celtæ was never applied to the Irish before the seventeenth century. They never applied it to themselves, but always understood it to be the name of the ancient inhabitants of France—"Scoti sumus, non Galli," they said—"We are Gaels, not Gauls." From the sixth book of Cæsar's Commentaries it is as clear that the Celtæ of Gaul had made considerable progress in civilization—that they had an order of priests called Druids, who believed in, and inculcated the doctrine of, the immortality of the soul and the metempsychosis—that they offered various sacrifices, and worshipped Mercury as their favourite god, because they believed him to be the inventor of all the arts, and the promoter of mercantile affairs. Cæsar said, on the other hand, of the Germans, that they had no Druids to preside over religious affairs, and that they paid no attention to sacrifices, that they only worshipped those gods whom they saw with their own eyes—as the sun, Vulcan (fire), and the moon. In those passages the true line of distinction between the Teutonic and Celtic races was drawn by this great Roman general and statesman—a distinction which nearly held good to the present day, after the lapse of nineteen centuries, and the various admixtures of the two races. Dr. O'Donovan then alluded to the great strength and stature of the early Irish, as proved by old writers. He said he would not detain the Section longer, but would reserve to another occasion some remarks on the moral condition of the ancient Irish.

'On the Sea of Azoff and the Swash or Putrid Sea,' by Capt. SHERRARD OSBORNE, R.N.

'On the Physical Characters of the Ancient and Modern Germans,' by Dr. BADDOE.—Of no people have the physical characters been more distinctly handed down to us, though there was not the same kind of pictorial evidence on the subject as existed with regard to the Egyptians and other peoples, yet the descriptions of the Germans left by Greek and Latin authors were very full, and many of them tallied remarkably. They were invariably spoken of as a people with fair skins, blue eyes, and red or yellow hair. Niebuhr and Bunsen, however, have expressed an opinion that the Germans of the present day have to a great extent lost the physical characteristics which distinguished their ancestors. He (Dr. Baddoe) was, however, disposed to doubt whether the differences in complexion between the Italians and the purest blooded Germans were more distinctly marked in the first and second centuries of the Christian era than at the present day. The other opinion arose, perhaps, from the authors to whom he had alluded having laid too much stress upon the statements as to uniformity of aspect among the Germans made by Tacitus, who was led to describe the barbarians as having yellow or red hair and blue eyes, because he observed these physical characteristics among the majority of the people. It was very unlikely that there were not among the Germans some who had black hair and black eyes and complexion, and if such did exist at all it was easy to believe that the gradations of complexion did not exist among them, although men with light hair and complexions formed the majority. Niebuhr and Bunsen might also have been led astray by a mistake as to the true meaning of the words *flavus* and *rutilus*, as used to denote the colour of hair and complexion. It was very doubtful whether it is right to translate these two adjectives always by the English words yellow and red. Many passages could be quoted in which that was not the proper translation of these words. The general result of all the author's investigation went to show that red hair was seldom as common in any district in Germany, as it was in some parts of Scotland, and even of Ireland. However, in every district which might be supposed to form part of the original homeland of the Gothic races, fair hair and light complexions were in excess. The fairest hair was to be found in Grovangen, East Friesland, West Friesland, and Brunswick. The proportion of light eyes by no means corresponds with that of light hair. It was greatest in the district of Grovangen, where about four-fifths of the population had red, light, grey, or blue eyes. In Flanders the proportion was little more than half. The combination of blonde hair with hazel eyes was common in Germany and in the Saxon parts of England, but rare among Celtic populations. The Austrians differed greatly in appearance from the other Germans, and among them was a large proportion of persons having dark hair and eyes. On the whole the Germans were in the time of the Romans a people fairer than the Gauls, and much fairer than nations which inhabited southern Europe, and this description applied equally to them at the present day.

'On China, in more immediate reference to pending Operations in that Quarter,' by Sir JOHN DAVIS.—The paper, after some general remarks on the interest of the subject at the present moment, enters into a running but graphic description of the coast of Canton river, Chusan, Shanghai, &c., showing the facilities which in many places they afford for defence, and for annoying the hostile fleet, but at the same time the facility with which any such annoyance on the part of the Chinese could be overcome. With respect to Canton, Sir John says:—"It seems at once good policy as regards the Cantonese, and mere justice and humanity towards the better-disposed populations towards the north-east, that, if a lesson is to be administered, it should be administered in the right quarter. Topical evils require topical remedies, and if we were once more to leave Canton to itself (as we have done before), the question would again be asked, which was so often asked them, 'Why did you not address yourself to those who had offended you, and were prepared to resist you, instead of attacking us?' At Canton, besides, there is nothing at present to lose, for all trade has left it, and all the foreign quarter is in ruins. The complete capture and occupation of the city, and the heights behind, by our troops, with Hong-Kong and its harbour, its barracks and its hospitals, for the base of operations, would at once dispel the delusions of the Cantonese, and supply us with a material guarantee and pledge, as long as it was retained, for all that we have to require from the Pekin Government. These two points seem to comprise within themselves the objects of the expedition—that is to say, satisfaction for the past and security for the future; and as the surest way to the second, the first seems indispensable—viz., for the capture and occupation of the provincial city."

Mr. CRAWFURD said that China should be attacked, not only in Canton but in its very centre, and the Emperor should be compelled to make proper concessions. He did not wish for annexation, as they had trouble enough elsewhere with such; but he thought that Canton should be brought effectually under their power.—General CHESNEY said:—Sir John Davis acted with his usual promptness and energy in undertaking the expedition to Canton—in fact, he made all preparations and got it up in one day. I was one of those who accompanied him. He said to me in the morning, I am going up the Canton river to punish the Cantonese, and the next day we were on our way. Sir John Davis's opinion and advice was that Canton should then be well punished. He had the place in his power, and if the Chinese had held out five minutes longer than they did, he would have destroyed their walls for them. His advice was most valuable, and had it been followed then, we should not now have been in our present unpleasant position. But instead of supporting Sir John Davis, what did the home Government do? They sent him orders to desist from all decided steps against Canton, and never to take such steps in future without first consulting the home authorities. He felt that the Cantonese required summary punishment. They had committed an outrage against us, and he saw, on consulting Vattel, that we were entitled by the rules of war to occupy Canton; therefore he sailed up the Canton river, took and spiked 1,800 guns, and had the city in his power. Had he been supported from home, he would have given the Canton people a wholesome lesson which they would have remembered for the future. I heartily hope that the Cantonese will be punished, and punished severely—that the town may be taken and disarmed—a treaty entered into with the Emperor placing us on an equal footing with other nations, giving us an ambassador at Pekin, and allowing trade with China to flow in its natural channels. But all this may be done without destroying the people of Canton; and I trust that in showing them that we can beat them, there will be no massacre or unnecessary bloodshed, and that

pence may be speedily restored between us and this highly commercial and most interesting people.

'On the Round Towers of Ireland,' by Mr. Gordon M. Hills,—in which he detailed the results of a survey of those interesting monuments which he had undertaken, and had already carried far towards completion. The drawings which he had made would be exhibited at the Academy.

'On Routes from Lima to the Navigable Branches of the Amazon, with Remarks on Eastern Peru as a field for Emigration,' by Mr. Santiago Jackson.

FRIDAY.

'On the Ethnological Inferences deducible from the Assyrian Modes of Writing,' by the Rev. Dr. Hincks.

'On the Routes pursued by Herren Robert, Hermann and Adolphe Schlagintweit, in India, the Himalayas, Thibet, and Turkistan,' read by Herr Robert Schlagintweit.—In 1854 they reached India, and passed from Bombay to Madras, through Central India, each by different routes, making geological, geographical, and other scientific investigations as they proceeded. On their sea voyage previously they had made observations as to the specific gravity of sea water, and also as to the currents of the sea, and continued these in the voyage from Madras to Calcutta. On arriving at Calcutta, in the beginning of 1855, Herr Hermann Schlagintweit set out for the north-western provinces of Bengal, and, having reached Sikkin, continued their researches all along the Himalayas, with a view of ascertaining their height, and the characteristics of the places, from that until they came to the high mountain of Nepaul, which was lately called Mount Everest by Col. Waugh, after his distinguished predecessor. This is the highest mountain in the world at present known, being considerably over 29,000 feet above the level of the sea. The natives have two names for it—one of them, Gorishanta, which is mythological, is to be found only in the Nepaulese, and the second name, Chingofanmara, is that by which it is known among the people of Thibet. The name Deodunga, which was mentioned by Mr. Hodgson in connexion with this peak, was not the name of it at all, but of a small mountain some 8,000 feet high, which lies in the same direction. After leaving Sikkin, Hermann, having examined part of Bhostin, the Himalayas, and Upper Assam, returned to Calcutta, by Brahmapootra and the delta of the Ganges. Robert, and his brother Adolphe, left Calcutta in March, 1855, and after passing through the north-western provinces, reached Natal, and then went to Milum, and thence to Thibet. They investigated the geographical and other features of the country as they went on: the principal of which was the alluvial deposit along an immense valley, the largest probably in the world. In this valley the Indus and the Dihong both take their rise, and flow in the one direction for hundreds of miles in parallel lines, separated only by a small rise in the surface of the valley. They then went to Ibiganuri, and having encamped on a glacier there, at the height of 19,220 feet, on the evening of the 18th of August, they on the 19th of August succeeded in reaching Ibiganuri, at the height of 22,260 feet, the greatest height which had ever been attained on any mountain. They returned by different routes, each pursuing their inquiries. He then entered into some details respecting a journey which they took in the subsequent year to Central India, where they visited the plateau of Amerkantak, which is only about 3,300 in height above the level of the sea, though it is commonly supposed to be 8,000 feet. Four rivers take their rise in the neighbourhood of this plateau,—the Nerbudda, the Soane, the Johilla, and the Mohamaddy. From this tour they returned to Simla by way of Delhi. Herr Hermann stated that he had arrived at the conclusion, that Western Thibet did not form a plateau, but was an undulating country, and one of the features of it near the Indies was the depression of the snow line to 17,900 feet, owing to the great amount of snow and rain which falls there. Sometimes the heat in the deep valley of Balkistan, at an elevation of between 7,000 and 8,000 feet, even under the glaciers, is excessive, the thermometer from the 1st of July to the 20th marking 73 to 75 degrees Fahrenheit at the minimum, the maximum being sometimes 90 degrees. The snow line at Karakoim, which they visited in a former journey after reaching the mountains of Nepaul, is the highest in the world, being 18,600 feet. That range of mountains, it should have been observed, is called the Black Mountains, in opposition to the Himalayan range, which means the "White Mountains." The two ranges run parallel.

'The Human Hand an Index of Mental Development,' by Mr. R. Beamish.

'On the Anomalous Period of the Rising of the Niger,' by Dr. Henry Barth.

'Report of Mr. Anderson's Search after the Crews of the Erebus and Terror,' by Sir John Richardson, R.N.

'On the Final Arctic Searching Expedition,' by Mr. Clement R. Markham.

THURSDAY.

SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

President—The Archbishop of Dublin.

Vice-Presidents—Lord Monteagle, E. Chadwick, The Recorder of Birmingham, Dr. Lawson, E. Baines, Dr. Strang, Dr. Donnelly, F. G. P. Neison, J. R. Napier.

Secretaries—W. Newmarch, Prof. Cairnes, Dr. Hutton.

Committee—E. Barrington, R. Barrington, The Lord Chief Baron, W. Bottomley, R. Chambers, J. Crawfurd, Dr. Hancock, — Halsall, J. Haughton, Prof. Ingram, M. Jottrand, J. W. Kavanagh, Lieut.-Col. Larcom, Prof. Laycock, J. Lentaigne, Prof. Leslie, C. V. Maeren, J. J. Murphy, W. Murray, Prof. O'Hagan, W. Pare, J. Perry, J. Pim, The Lord Provost of Glasgow, J. Shuttleworth, J. M. Wilson, J. Yates.

Introductory Address by Archbishop Whately.

'On the Rise, Progress, and Value of the Embroidered Muslin Manufacture of Scotland and Ireland,' by Dr. J. Strang.

'On a Cash Land Trade, Wholesale and Retail,' by Mr. R. Dowden.

'Reasons for extending Limited Liability to Banking Companies,' by Mr. J. J. Murray.—He argued that if any company were permitted to establish a bank with limited liability for the shareholders, banks would spring up everywhere, and the country would be much more efficiently supplied with banking accommodation than it can be under the existing system, which causes the country districts to be dependent on branches of the great banks, which have their head-quarters in the large towns. It was also argued that the extension of the privilege of limited liability to bank shareholders would have the effect of converting a large proportion of the depositors into shareholders, so that the proportion of the capital being larger, and that of deposits being less, the capital would bear a larger proportion to the liabilities, and the business would be safer. It was also strongly insisted that the law ought to provide for an efficient audit, by requiring that the auditors appointed by the shareholders should have perfectly full powers of inspection. Those remarks apply to what is properly called banking. With respect to the issue of notes, it was proposed that in case of Parliament authorizing any increase of the present note circulation, such notes should be issued only against securities and bullion, and that the issue of notes by any company should not exceed its paid-up capital.

'On the Recent Legislation relative to Joint-Stock Companies and Joint-Stock Banks,' by Mr. W. Newmarch.—The author began by a historical outline of the subject. Joint-stock companies are unknown to the common law; but the clear necessity of the case enabled many companies to obtain charters of incorporation, for railway and other purposes, from Parliament in some cases, and from the Crown in others. In 1844 an Act of Parliament was passed for the purpose of regulating the incorporation and working of joint-stock companies, both for banking and for other purposes. This made the granting of charters of incorporation dependent on the discretion of the Board of Trade, and provided a very elaborate administrative system for their regulation. It did not touch the question of limited liability, which, until 1856, could be conferred only by Parliament. The administrative system thus provided did not work satisfactorily—it was too complex, and gave the public a false idea of security, which, in many well-known unhappy cases, proved not to be well founded. In 1856 the well-known Joint-Stock Companies' Act was passed. A great mass of complications was got rid of on that occasion, by laying down the principle, unknown to the common law, but necessary at the present time, that incorporation is not a favour but a right; and, consistently with that principle, but unlike the Act of 1844, the administrative machinery it provided for the purpose of registration, publicity, &c. is extremely simple. The Act of 1856 also empowered companies to constitute themselves with the privilege of limited liability. It did not affect banks, which remain under the operation of previous acts, nor insurance companies, which, from the nature of their business, are able to protect themselves against the common-law operation of unlimited liability by treating every policy as a separate contract and inserting therein a clause limiting their liability. Thus the question stands at present. Mr. Newmarch thinks the settlement of the general question of limited liability quite satisfactory, owing both to the fairness of the principle and to the simplicity of the machinery; but is inclined to hesitate about its extension to banking companies, in consequence of the important difference between companies which trade on their own moneys, such as railway and manufacturing companies, and those which, like banks, trade in great part on the money of others. It is reasonable to attach a more stringent responsibility to the latter than to the former.

'On the Ages of the Population in Manchester and Liverpool,' by Mr. J. T. Dawson.—Mr. Dawson concluded with a statement to the effect that, with the growth of population, there were clearly visible increased productive and defensive powers arising from increase both in health and in the duration of life.

'On Annuities on Lives,' by Mr. Charles M. Willich.

'On a Formula for ascertaining the Expectation of Life,' by the Same.

FRIDAY.

'On the Progress of Free Trade on the Continent,' by M. Corr Vander Maeren.—M. Jottrand, of Brussels, also addressed the meeting in French, on the same subject.

'On some of the Economical Questions connected with the Effect of the new Gold in diminishing the Difficulties of the last few Years,' by Mr. W. Newmarch.—The topic, he said, connected with the probable effect of the gold discoveries, is uppermost in persons' minds. The phenomenon occurred only once before—viz., in the sixteenth century, by the discovery of the mines of the new world. He might safely say that, in 1848, the stock of gold in the commercial world was 560 millions,—the addition being equal to one-third, or thirty-three per cent., since that time. Two questions are, first, the causes of the diffusion of the two hundred millions; secondly, have they operated as an addition to real wealth, or have they only increased the circulating medium? There can be no controversy as to the first question; but the controversy is whether it increases the real or only nominal wealth of the world. The views of Mr. Newmarch and Mr. Tooke are contained in the sixth volume of 'The History of Prices.'

'On the Effects of the Gold of Australia and California,' by Mr. J. Crawfurd.—The principal results sought to be established were, that the enormous quantities of gold and silver suddenly thrown upon the market during the last nine years have not produced a proportionate depreciation in the price of these metals, and rise in prices, and that the cause of this arises from the capacity of modern industry to increase indefinitely the impetus given to manufactures and commerce by the discovery of the precious metals. The experience of the last nine years leads to the conclusion that the great fall in prices commonly supposed to have taken place in the sixteenth and seventeenth centuries, after the discovery of the American mines, if it really took place, did not arise from this cause, but from the growth of industry thus fostered, and the general progress of society. Mr. Crawfurd pointed out that, unless new mines are discovered, the proportion of gold and silver yearly imported to the old stock will be diminishing gradually, and that

in any case the industrial development will absorb the new supplies.

'On the Effects of the New Gold Field, as an Instrument of Purchase, on the Production and Distribution of real Wealth,' by Prof. CAIRNES.—He declined to consider the important consequences that must flow from the accidental circumstances under which the new gold has been found—that is, in a new soil, to which adventurers have been thereby attracted from all parts of the world, and who, bringing with them the knowledge and arts of civilized life, are placed under unusually favourable circumstances for the production of real wealth. He proposed to consider solely the effect of the increased quantity of gold, as money, in the production and distribution of real wealth,—meaning by real wealth, all valuable things, *minus* money, which, he added, might be called nominal wealth. He noticed two conflicting theories on the subject. One school of political economists contend that an increased quantity of money produces no beneficent effect, but that, so far as it produces any effect, it is a mischievous one; that the ultimate result will be a general rise of prices, which will benefit nobody, except those under obligation to pay, or those having a claim to receive, a certain quantity of money. This theory, he thinks, correctly describes the final result, but does not explain the phenomenon during the transition from low to high prices. Another school of economists look upon every increase of gold as a blessing, as it produces, as they contend, by occasioning an increased demand, a corresponding increase of wealth. After pointing out the fallacy involved in this view, Prof. Cairnes proceeded to supply the defect in the first theory by showing that very important results are produced during the transit of the stream of gold over the entire world. Those whose incomes are the first to rise will be benefited at the expense of their fellow-men. Therefore, his final conclusion is, that the sole effect of the new gold is to alter the distribution of real wealth, but not directly to add to its aggregate amount.—The PRESIDENT said there was something peculiar in the search after gold; and even though it turned out that the aggregate of the gains of the gold diggers was less than that of any other class of workers, yet still persons would be seduced by the temptation of the few great prizes that might have been gained in the search for gold, overlooking the great number of failures. He remembered hearing it remarked, that it was a common saying in Peru, that if a person worked in a copper mine he was likely to make a good fortune, that if he worked in a silver mine he might gain or lose, but that if he worked in a gold mine he was sure to be ruined.

THURSDAY.

SECTION G.—MECHANICAL SCIENCE.

President—The EARL OF ROSSE.
Vice-Presidents—G. RENNIE, R. MALLET, Sir J. MACNEILL, J. SCOTT RUSSELL, W. DARGAN.
Secretaries—J. THOMPSON, W. T. DOYNE, H. WRIGHT, Prof. DOWNING, A. TATE.
Committee—J. G. Appold, C. Atherton, P. W. Barlow, J. Barton, J. Beattie, Major Blakesley, Sir T. Deane, J. C. Dennis, W. Fairbairn, B. Fothergill, R. H. Frith, B. D. Gibbons, Dr. Green, T. Grubb, W. J. Hancock, S. W. Haughton, A. Henderson, G. W. Hemans, J. Hill, Prof. Jack, G. Lowe, J. M'Connell, J. Macgregor, G. M. Miller, J. Moffat, Admiral Moorsom, J. R. Napier, J. Nasmyth, J. B. Nelison, P. Neville, J. Oldham, J. Owen, J. H. Owen, W. J. Macquorn-Rankine, Rev. Dr. Robinson, C. B. Robinson, W. Smith, G. J. Stoney, B. B. Stoney, S. Ward, C. Vignoles, G. Wilkinson, T. Wilson, B. Woodcroft, Rev. Dr. Wooley, Lord Wrottesley.

LORD ROSSE, in his opening address to this Section, made some excellent observations on the general lack of scientific knowledge in the public service. He said:—Some years ago I went to see the workshop of a gentleman near London, who was endeavouring to make an air-engine. He found, after going to great expense for instruments, that the objects for which he required them would be sufficiently satisfied in a few elementary books of science. A little knowledge would have shown him that what he sought was already made known. The gentleman who introduced me told me that he believed he had already spent 100,000*l*. He stated that a rich lady had speculated in the invention to the extent of 30,000*l*. I am afraid that from this cause public, as well as private, interests have suffered. Three or four years ago I was sailing in the harbour of Portsmouth, and I saw a number of fine ships laid up; I asked a sailor what such and such a one was, and he said to me, "Such a ship is perfectly sound, but she rolled so tremendously that it was impossible to keep her masts in her." He pointed out another that sailed so slowly that she was utterly worthless. It was rather doubtful whether all the information I got from the sailor was correct, when a little book fell into my hands containing papers on the result of the Exhibition in 1851. They were lectures by some men of the day. Amongst them I found one by Capt. Moorsom, one of the most scientific officers of the navy. He was painfully sensible of the fact that, during the last war, the ships of the French and Spaniards, for stability and facility of manœuvring, were superior to those of the English, and although eventually the skill of our seamen, and their courage, had succeeded in establishing the supremacy of England, yet it was at such a sacrifice of life as might be avoided had our ships more nearly approached to those of the enemy. He clearly traces that state of things to the ignorance of scientific principles which prevailed amongst ship-builders. It is a fact, that a person who published a scientific treatise on the subject died a working shipwright, so little was the attention which was paid to it. I have heard on some occasions the complaint made that engineering science had effected very little for us. We should recollect that engineers do not spring up at the spur of the moment, and it always requires a strong inducement to direct inventive powers. Have we never heard of official prejudice in this country? Besides, if any one invents anything, what chance is there that it can be kept secret? What chance is there that the enemy would not get possession of it? It is not by little party inventions that the engineering skill of England has been brought to aid the State in any contest. I believe if some of the most eminent of English civil engineers had been consulted in proper time, in conjunction with the military engineers,—I believe that means would be found by which the gigantic engineering resources of England could be brought to bear effectually on the struggle. It is certainly too much to say that Cronstadt would have been taken by contract. It is certain that wrought iron will resist heavy ordnance, and further, it is a fact, which nobody will deny, that the sea would be able to bear that weight. At that time there were actually French experiments in existence on the resistance of wrought iron to shot,—experiments which would be enough to afford correct data for the necessary calculations. There is little doubt that vessels might have been constructed of such solid materials as would enable them to enter a harbour and take the batteries in reverse. This is not the place to enter into the minutiæ of such subjects; but when it is said that engineering science in England has added so little to our strength, I think we should call upon those who say so to show that engineering science was applied for in a proper time and in a proper manner. These observations may be a sufficient answer to the question, Why the Mechanical Section is necessary?

'On the Adaptation of Suspension Bridges to sustain the Passage of Railway Trains,' by Mr. C. VIGNOLES.—The subject was comprised under the following heads:—First, the maximum load to pass the bridge; second, the velocity of the train; third, the strength of the chains; fourth, the rigidity of the platform; fifth, prevention of undulation, vibration, and oscillation. The novelty of the author's inquiry in the matters he adduced was confined to the question of the rigidity of the platform. He instanced the bridge over the River Dnieper, at Keiff, in Prussia, erected according to his designs, and stated that the successful resistance of the well-braced platform of this bridge to the effect of hurricane winds had been long remarkable. This bridge was completed about four years ago, just before the commencement of the Russian War, and at a time when he little thought the result of his exertions would so soon be used in facilitating the military operations of the Russians against the allied forces. He alluded to the severe tests which it had successfully withstood, in the conveyance of armies with heavy ordnance, and he came to the conclusion that the adaptation of suspension bridges to railway purposes is quite practicable; recommending, at the same time, that the speed of the trains, when passing, should be kept moderate, as compared with ordinary speed on railways.

'On the Mechanical Effect of combining Girders and Suspension Chains,' by Mr. P. W. BARLOW.—The author states that his attention had been directed to the subject from having, as engineer to the Londonderry and Enniskillen and Londonderry and Coleraine Railways, been required to consider how a junction of the lines, combined with an improved road communication, could best be carried out. The design had been approved by Sir William Corbett, the consulting engineer of the Road Commissioners; but some doubt having been expressed as to the accuracy of the calculation of the weight of metal required in a suspension girder, he caused a series of experiments to be made, the results of which completely confirmed his calculation; and, being of great practical importance, he laid them before the British Association, in order that the simple mechanical question of the effect of combining a girder and chain, on which no difference of opinion ought to exist, should be determined. The author, after some general remarks on the construction of bridges, in which he points out that a girder to have equal strength requires double the metal, and to have equal rigidity, four times the metal, of a suspension chain of the same span, if loaded equally all over, called attention to the theory hitherto adopted on this subject of the weight of girder required to stiffen a suspension chain, viz., that of Mr. C. Clarke, who, in his work on the Britannia Tube, in speaking of the difficulty of rendering the Menai Suspension Bridge sufficiently rigid for railway traffic, asserts that the construction of a platform 451 feet long, sufficiently rigid for a railway, almost amounts to the construction of the tube itself. The author then described his various experiments on a model bridge, 13 feet 6 inches in length, the results of which are entirely at variance with Mr. Clarke's theory, inasmuch as they prove that a girder, when attached to a chain, will not deflect more than one twenty-fifth of a girder unattached, under ordinary circumstances. Having, by repeated experiments, established this result, which, he explains, is quite consistent with the law of the deflection being as the cube of the length, he proceeded to compare the weight of metal and deflection of the proposed Londonderry Bridge with a girder of equal span, and selected the Britannia Tube, from being nearly the same span. The weight of metal in one span of the Britannia Tube is 3,100 tons. The weight of metal in the proposed Londonderry Bridge, with equal deflections, is 432 tons. This result, the author remarked, is unexpected, but quite consistent with the fact that the Derry Bridge has three times the depth, and has 2,600 tons less of its own weight to support. The author, in summing up the result of his investigation, gives the following results:—That the deflection of the wave of a girder attached to a chain similar to the Londonderry Bridge will not exceed one twenty-fifth of the deflection of the same girder not attached to the chain. That theoretically the saving of metal to give equal strength in a suspension bridge is only one-half of a girder; but as it can be made of great depth without practical difficulty, and as the deflection varies as the cube of the depth, a bridge, on the principle of such spans as the Londonderry Bridge, may be made, under average circumstances, with at least one-fourth of the metal of an ordinary girder bridge having equal rigidity.

'Report on Ventilation of Coal-Mines by Fans,' by Mr. J. NASMYTH.

FRIDAY.

'Early Modes of Propelling Ships,' by Mr. G. MACGREGOR.—The paper described the various methods adopted by the Egyptians, Assyrians, Chinese, and other nations for propelling ships and boats, up to the introduction of steam. Mr. Macgregor illustrated his description by a great variety of diagrams and drawings copied from rare books in the British Museum, and ancient sculptures found in different places, which gave interest to his valuable statement.

'Continuation of Report on Screw Propeller Experiments,' by Mr. G. RENNIE.

'Report of Sewerage Committee,' by Messrs. JAMES YATES and HENRY WRIGHT.

'On the Mechanical Structure of the Great Ship,' by Mr. J. SCOTT RUSSELL.—He stated that he was not, as was generally supposed, an advocate for large ships, but the contrary; and it was the peculiarity of the Great Eastern that she was the smallest ship that could be built capable of doing the work which she was intended to perform. It had been found that a steam-ship could not be profitably worked which was of a less size than a ton to a mile of the voyage she was to perform, carrying her own coal. The voyage to Australia and back was 25,000 miles. The burthen of the Great Eastern, according to this principle, ought to be 25,000 tons, whereas her actual tonnage was only 22,000. Mr. Brunel first started the idea of building a vessel capable of performing the voyage to India or Australia and back, and the result of his suggestion was the great ship now fast approaching completion. Mr. Russell then stated that the Great Eastern, as far as her lines were concerned, was a child of the Mechanical Section of the British Association. It was formed on the wave principle, which, at the former meeting of the Association in Dublin, twenty-two years ago, he had first propounded, which, after careful investigation by a Committee of the Association, had been found to be the right principle, and was now universally adopted. When a vessel was about to be built intended to attain a certain speed, from ten miles an hour upwards, reference to the table of the wave principle informed them of the length which the bows and stern must be, and of the peculiarity of construction necessary in order to procure the desired result. According to this principle it was necessary, in order to acquire the speed which this vessel was to attain, that the length of her bow should be 330, the length of her stern 250, of the midship 120, which, with 10 feet for the screw-propeller, gave an entire length of 680 feet. He showed that, while increasing the carrying or paying power of the ship to an immense extent, its mode of construction was such that the increase in the resistance of the water was in a much lower ratio, so that the vessel, notwithstanding its enormous size, could be worked as economically as a smaller one. He next entered into a detailed description of the various improvements which he had introduced into the building of iron vessels, which were at first constructed in close imitation of the model of wooden ships with cumbrous timber frames, which gave no strength, but entailed great expense. He could not always build ships upon the improved principles, because owners insisted on having them made in the old-fashioned way. All improvements, which Mr. Scott detailed at great length, were introduced into the Great Eastern, together with the cellular system, which had been so successfully applied in the construction of the Britannia Bridge, and which presented the greatest amount of strength that could possibly be procured against any crushing or resistance she might accidentally encounter. In fact, there was nothing new in the structure of this ship, save the cellular system, as the principles applied in her construction had been repeatedly tested and fully established as those which should be adopted in the building of iron ships, so that the Great Eastern presented the combined result of sound science and the best practical experience. Mr. Russell concluded by stating, that the vessel would be propelled by a screw and two paddles, giving her a nominal horse-power of 2,500. He wished he could tell them the speed at which the Great Eastern would go, but this secret for the present was only for the owners.

Mr. FAIRBAIRN expressed his approval of the principle on which the vessel had been constructed, and he believed that it would be successful, and realize all the expectations that had been formed of it.

MISCELLANEA

The Atlantic Telegraph Plateau.—The ocean bed of the North Atlantic is a curious study; in some parts furrowed by currents, in others presenting banks, the accumulations perhaps of the *débris* of these ocean rivers during countless ages. To the west, the Gulf Stream pours along in a bed from one mile to a mile and a half in depth. To the east of this, and south of the Great Banks, is a basin, eight or ten degrees square, where the bottom attains a greater depression than perhaps the highest peaks of the Andes or Himalaya,—six miles of line have failed to reach the bottom; but of this more presently. Taking a profile of the Atlantic basin in our own latitude, we find a far greater depression than any mountain elevation on our own continent. Four or five Alleghanies would have to be piled on each other, and on them added Fremont's peak, before their point would show itself above the surface. Between the Azores and the mouth of the Tagus, this decreases to about three miles. Further north, there is an apparent decrease of depth, with increasing regularity of bottom, though it is problematical whether this is not owing to the greater accuracy with which these observations have been conducted. This appears to be the natural route for the Transatlantic telegraph. Other plans have been proposed—one a northing circuit, between the several points of Scotland, Iceland, Greenland, and the Labrador coast, each span being some 500 miles, or to use one or two of the island groups of the Atlantic. In the route selected we have many advantages—convenient harbours at either terminus; a depth of water at every point sufficient to place the wire beyond the reach of any surface causes, such as ice or the anchor of any ship, yet not at an impracticable depth, being at the shoalest several hundred feet, and in mid-Atlantic not materially over two miles. During a thousand miles of its course the gradual depression of the ocean bed does not exceed 500 fathoms. On either side lie Ireland and Newfoundland, the breast-works of either continent, approaching within 1,700 miles, and forming the natural terminus of its route. Trinity Bay is its western head, and Valentia Bay, on the south-western point of Ireland, its eastern. Specimens of the bottom, when subjected to a powerful glass, exhibit delicate shells and infusoria, fragile as if carved in egg-shell, and yet as perfect in all their delicate formation as any of the more durable works of Nature. The least attrition would crumble all this to powder. The inference is, that all agitation of winds and currents is confined to the surface, and that at these sunless depths the great mass of water remains in almost a quiescent state, and that the telegraphic wire, if once laid in safety, would lie for ever beyond the reach of harm, sinking among and covered by these fleecy particles.—*New York Times.*

Coal and Iron.—The Neapolitan official journal speaks of the quantity of iron and coal with which the Kingdom of the Two Sicilies abounds, and anticipates the time when the country will be independent of the foreigner. With respect to coal, it says that several vast carboniferous barriers have been discovered, and that the one near Gerace is beginning to be productive. With regard to iron, the establishment of Mongiana and of Ferdinandea is spoken of with approbation, where, in six months of this year, 30,000 cantari of ghise (iron) are said to have been discovered. After three years of investigation in the Apennines, the mines of San Donato are said to have yielded 40,000 cantari of mineral, and those of Campoli the same. The mines of San Donato have four galleries. The mineral which is discovered there is of good quality, belonging to the "Limonite Ferro ossidato idrato." In the mines of Campoli, the mineral is of the same description, being an "idrossido di ferro." The report of General D'Agostino, the Inspector-General, not a little expanded by the official journal, calls upon all Neapolitans to thank God for having bestowed on them a monarch to whom he has given such an energetic genius and so enlightened an intellect!

To CORRESPONDENTS.—An Old Subscriber—C. J. La T.—J. A. S.—LL.D.—J. S. C.—Lector—W. M.—received.

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Amount Assured	£1,811,665 0 0
Annual Income	£51,389 14 7
Accumulated Fund	£110,000 0 0

JAMES INGLIS, Secretary.

Applications for Agencies to be made to the Secretary.

THE MUTUAL LIFE ASSURANCE SOCIETY, 39, KING-STREET, CHEAPSIDE, LONDON.
Established 1834.

This is a purely Mutual Life Assurance Society, with a Capital of more than 280,000*l.* invested in Government and Real Securities, created entirely by the steady accumulation of the Premiums, and all belonging to the Members. The Assurances in force are, 1,360,000*l.* and the Income upwards of 55,000*l.* per annum.

Detailed Prospectuses and Forms of Proposal, together with the list of Bonuses paid on the Claims of the past Year, and the General Cash Account and Balance Sheet of the Society to the 31st December last, will be given on a written or personal application.

CHARLES INGALL, Actuary.

IMPERIAL LIFE INSURANCE COMPANY,
1, OLD BROAD-STREET, LONDON.
Instituted 1820.

T. GEORGE BARCLAY, Esq. *Chairman.*
MARTIN T. SMITH, M.P., Esq. *Deputy-Chairman.*

ONE-THIRD of the Premium on Insurance of 500*l.* and upwards, for the whole term of life, may remain as a debt upon the Policy, to be paid off at convenience; or the Directors will lend sums of 50*l.* and upwards, on the security of Policies effected with this Company for the whole term of life, when they have acquired an adequate value.

FOUR-FIFTHS, or 80 per cent. of the Profits are assigned to Policies *every fifth year*, and may be applied to increase the sum insured, to an immediate payment in cash, or to the reduction and ultimate extinction of future Premiums.

At the fifth appropriation of profits for the five years terminating January 31, 1856, a reversionary bonus was declared of 1*l.* 10*s.* per cent. on the sums insured, and subsisting additions for every premium paid during the five years. This bonus, on policies of the longest duration, exceeds 2*l.* 5*s.* per cent. per annum on the original sums insured, and increases a policy of 1,000*l.* to 1,638*l.*

Proposals for insurances may be made at the Chief Office, as above; at the Branch Office, 16, Pall Mall, London; or to any of the Agents throughout the Kingdom.

BONUS TABLE,

Showing the Additions made to Policies of 1,000*l.* each.

Date of Insurance.	Amount of Additions to Feb. 1, 1851.	Addition made as on Feb. 1, 1856.	Sum Payable after Death.
1820.....	£ 523 16 0	£114 5 0	£ 1638 1 0
1825.....	332 14 0	103 14 0	1486 8 0
1830.....	241 12 0	93 2 0	1334 14 0
1835.....	185 3 0	88 17 0	1274 0 0
1840.....	128 15 0	84 13 0	1213 8 0
1845.....	65 15 0	79 18 0	1145 13 0
1850.....	10 0 0	75 15 0	1085 15 0
1855.....	—	15 0 0	1015 0 0

And for intermediate years in proportion.

The next appropriation will be made in 1861.

Insurances, without participation in Profits, may be effected at reduced rates.

SAMUEL INGALL, Actuary.

UNITED KINGDOM LIFE ASSURANCE COMPANY,
8, WATERLOO-PLACE, PALL MALL, LONDON, S.W.

DIRECTORS.

THE HON. FRANCIS SCOTT, M.P. *Chairman;* CHARLES BERWICK CURTIS, Esq. *Deputy-Chairman.*

EDWARD LENNOX BOYD, Esq. F.S.A. (*Resident.*)
CHARLES DOWNES, Esq.
WILLIAM FAIRLIE, Esq.
D. Q. HENRIQUES, Esq.
J. G. HENRIQUES, Esq.
A. H. MACDOUGALL, Esq.
F. C. MAITLAND, Esq.
WILLIAM RAILTON, Esq.
THOMAS THORBY, Esq. F.S.A.
HENRY TOOGOOD, Esq.

Secretary—PATRICK MACINTYRE, Esq.

Special Notice.—Third Division of Profits.

THE unusual success which has attended the cautious yet energetic operations of this Company has enabled the Directors to add Reversionary Bonuses to Policies on the participating class, averaging nearly 2 per cent. per annum on the sum insured, or from 30 to 100 per cent. on the Premiums paid.

Parties insuring with this Company do not incur the risk of Copartnership, as is the case in Mutual Offices.

Established nearly a Quarter of a Century.

Annual Income upwards of £136,000.

The Funds or Property of the Company, as at 31st December, 1856, amounted to 593,930*l.* 8*s.* 9*d.*, invested in Government and other approved Securities.

Prospectuses and every information will be afforded on application to E. LENNOX BOYD, Resident Director.

PATENT CONCERTINAS, 36s.; ditto to play in all the keys, 52s. 6d.; ditto, full compass (48 keys), 4 guineas: all are six-sided, and have the double action. Also the new Duett Concertina, at 31s. 6d. and 42s.

Wheatstone & Co. 20, Conduit-street, London.

MESSRS. J. & R. M'CRACKEN, FOREIGN AGENTS, and AGENTS to the ROYAL ACADEMY, 7, Old Jewry, beg to remind the Nobility, Gentry, and Artists, that they continue to receive Consignments of Objects of Fine Arts, Baggage, &c. from all parts of the Continent, for clearing through the Custom House, &c.; and that they undertake the shipment of effects to all parts of the world. Lists of their Correspondents abroad, and every information, may be had on application at their Office, as above. Also, in Paris, of M. M. GRENUX, 24, Rue Croix de Petits (established upwards of fifty years), Packer and Custom-House Agent to the French Court and to the Musée Royal.

STANDARD METEOROLOGICAL INSTRUMENTS.

NEGRETTI & ZAMBRA'S STANDARD BAROMETER.
NEGRETTI & ZAMBRA'S Patent MAXIMUM THERMOMETER.
NEGRETTI & ZAMBRA'S Patent MERCURIAL MINIMUM THERMOMETER.
NEGRETTI & ZAMBRA'S WET and DRY BULB HYGROMETER.
GLAISHER'S RAIN GAUGE.
MOFFATT'S OZONOMETER.
ATMOSPHERIC ELECTROMETER.
NEGRETTI & ZAMBRA'S Patent Thermometer for SOLAR and TERRESTRIAL RADIATION.

All the above Instruments are of *Standard accuracy*, and such as recommended by the COUNCIL of the BRITISH METEOROLOGICAL SOCIETY.

NEGRETTI & ZAMBRA,
Instrument Makers to *H.R.H. Prince Albert*,
The Royal Observatories Greenwich and Kew, the American Government, &c.
11, *HATTON-GARDEN, LONDON.*

Illustrated Price Lists sent by post on receipt of a stamped envelope.

ACHROMATIC MICROSCOPES.—
SMITH & BECK,
MANUFACTURING OPTICIANS,
6, COLEMAN-STREET, LONDON,
Have received
The COUNCIL MEDAL of the GREAT EXHIBITION of 1851,
and
The FIRST-CLASS PRIZE MEDAL of the PARIS EXHIBITION of 1855,
"For the excellence of their Microscopes."

An Illustrated Pamphlet of the 101. EDUCATIONAL MICROSCOPE, sent by post on receipt of six postage stamps.

A GENERAL CATALOGUE for MARCH, 1857, may be had on application.

PHOTOGRAPHY is now applicable to the Microscope, in illustration of which we may mention a very beautiful object prepared by Mr. Amadio, the Lord's Prayer, the whole space of which is scarcely visible to the naked eye, and yet when placed under the Microscope every letter appears in a good text-hand.—*Chemical Journal*, July 2*l.* 1857.—A great variety of Microscopic Photographs.—Address 7, Throgmorton-street.

MICROSCOPES.—J. AMADIO'S Improved COMPOUND MICROSCOPE, 2*l.* 2*s.*; Students', 3*l.* 13*s.* 6*d.*

"Both these are from Amadio, of Throgmorton-street, and are excellent of their kind, the more expensive especially."—*Household Words*, No. 343.

*** A large Assortment of Achromatic Microscopes.

MICROSCOPES.—J. AMADIO'S Botanical MICROSCOPES, packed in mahogany case, with three powers, condenser, pincers, and two slides, will show the animalcules in water, price 15*s.* 6*d.*—*The Field* newspaper, under the gardening department, gives the following valuable testimony:—"It is marvellously cheap, and will do everything which the lover of nature can wish it to accomplish, either at home or in the open air."—June 6, 1857.—7, Throgmorton-street.

*** A large assortment of Achromatic Microscopes.

MICROSCOPES, at SPENCER BROWNING & Co.'s.—Compound Microscopes, with objects, &c. from 6*s.* 6*d.*—The School Microscope, two powers, six objects, in case, 15*s.* 6*d.*—Students' Microscopes, 2*l.* 10*s.* and 4*l.*

Complete Illustrated Catalogue free, on receipt of four stamps, to Spencer Browning & Co. 111, Minories, E. Established Ninety Years.—Trade supplied.

RECONNOITRING TELESCOPES.—These celebrated Instruments, measuring, when closed, 3½ in., and sufficiently powerful to show the Moons of Jupiter, are admirably adapted to the Military man or Tourist. Price, through the post, 21*s.* The same instrument is fitted up with an additional eye-piece and stand, price through the post, 3*l.* 3*s.* To be had of the maker, JOHN DAVIS, Optician, DERBY.

PARIS FIRST-CLASS and LONDON PRIZE MEDALS.

WATHERSTON & BRODIEN,
GOLDSMITHS and JEWELLERS,
Manufactory, 16, Henrietta-street, Covent-garden, London, W.C.

ELKINGTON & Co., PATENTEES of the ELECTRO-PLATE, MANUFACTURING SILVERSMITHS, BRONZISTS, &c., beg to intimate that they have added to their extensive Stock a large variety of New Designs in the highest Class of Art, which have recently obtained for them at the Paris Exhibition the decoration of the Cross of the Legion of Honour, as well as the "Grande Médaille d'Honneur" (the only one awarded to the trade). The Council Medal was also awarded to them at the Exhibition in 1851.

Each article bears their mark, E. & Co., under a Crown; and articles sold as being plated by Elkington's Patent Process affords no guarantee of quality.

22, REGENT-STREET, and 45, MOORGATE-STREET, LONDON; and at their MANUFACTORY, NEWHALL-STREET, BIRMINGHAM. Estimates and Drawings sent free by post. Re-plating and Gilding as usual.

OSLERS' TABLE GLASS, CHANDELIERS, LUSTRES, &c., 44, Oxford-street, London, conducted in connexion with their Manufactory, Broad-street, Birmingham. Established 1807. Richly cut and engraved Decanters in great variety, Wine Glasses, Water Jugs, Goblets, and all kinds of Table Glass at exceedingly moderate prices. Crystal glass Chandeliers, of new and elegant designs, for Gas or Candles. A large stock of Foreign Ornamental Glass always on view. Furnishing orders executed with despatch.

F. DENT, sole Successor to E. J. Dent in all his patent rights and business at 61, Strand, and 34 and 35, Royal Exchange, and the Clock and Compass Factory at Somerset Wharf, Chronometer, Watch, and Clock Maker to the Queen and Prince Albert, and Maker of the GREAT CLOCK FOR THE HOUSES OF PARLIAMENT. Ladies' Gold Watches, Eight Guineas; Gentlemen's, Ten Guineas; strong Silver Lever Watches, Six Guineas. Church Clocks, with Compensation Pendulum, 85l.

J. W. BENSON'S WATCH, CLOCK, and CHRONOMETER MANUFACTORY, 33 and 34, LUDGATE-HILL, London. Established 1749.—J. W. BENSON, Manufacturer of GOLD and SILVER WATCHES of every description, construction, and pattern, invites attention to his magnificent and unprecedented display of Watches, which is admitted to be the largest and best selected Stock in London. It consists of Chronometer, Duplex, Patent Detached Lever, Horizontal, and Vertical Movements, jewelled, &c., with all the latest improvements, mounted in superbly-finished engine-turned and engraved Gold and Silver Cases. The designs engraved upon many of the cases are by eminent artists, and can only be obtained at this Manufactory. If the important requisites, superiority of finish, combined with accuracy of performance, elegance, durability, and reasonableness of price, are wished for, the intending purchaser should visit this Manufactory, or send for the ILLUSTRATED PAMPHLET, published by J. W. BENSON (and sent post free on application), which contains sketches, prices, and directions as to what Watch to buy, where to buy it, and how to use it. Several hundred letters have been received from persons who have bought Watches at this Manufactory, bearing testimony to the correct performances of the same. OPINIONS OF THE PRESS.

From the *Morning Post*, Oct. 30, 1856—"Exhibits exquisite artistic feeling in ornamentation, and perfection of mechanism in structure." From the *Morning Chronicle*, Oct. 30—"Excellence of design and perfection in workmanship." From the *Morning Advertiser*, Nov. 1—"The high repute which Mr. Benson has obtained for the qualities of his manufacture stands second to none." From the *Morning Herald*, Nov. 3—"The high standing of Mr. Benson as a London manufacturer must secure for him a large amount of public patronage." From the *Globe*, Nov. 3—"All that can be desired, in finish, taste, and design."

GOLD WATCHES, Horizontal Movements, Jewelled, &c., accurate time-keepers, 3l. 15s., 4l. 15s., 5l. 15s., to 15l. 15s. each. Gold Lever Watches, jewelled and highly finished movements, 6l. 6s., 8l. 8s., 10l. 10s., 12l. 12s., 14l. 14s., 16l. 16s., to 40 guineas.

SILVER WATCHES, Horizontal Movements, Jewelled, &c., exact time-keepers, 2l. 2s., 2l. 15s., 3l. 15s., to 5l. 5s. each. Silver Lever Watches, highly finished, jewelled movements, 3l. 10s., 4l. 10s., 5l. 10s., 6l. 10s., 7l. 10s., 8l. 10s., 10l. 10s., to 20 guineas.

A Two Years' Warranty given with every Watch, and sent, carriage paid, to Scotland, Ireland, Wales, or any part of the kingdom, upon receipt of Post-office or Bankers' order, made payable to J. W. BENSON, 33 and 34, Ludgate-hill, London.

Merchants, Shippers, and Watch Clubs supplied. Old Watches taken in Exchange.

DURABILITY of GUTTA PERCHA TUBING.—Many inquiries having been made as to the Durability of Gutta Percha Tubing, the Gutta Percha Company have pleasure in giving publicity to the following letter:—FROM SIR RAYMOND JARVIS, Bart., VENTNOR, ISLE of WIGHT. —Second Testimonial.—"March 10th, 1852.—In reply to your letter, received this morning, respecting the Gutta Percha Tubing for Pump Service, I can state, with much satisfaction, it answers perfectly. Many Builders, and other persons, have lately examined it, and there is not the least apparent difference since the first laying down, now several years; and I am informed that it is to be adopted generally in the houses that are being erected here."

N.B.—From this Testimonial it will be seen that the CORROSIVE WATER of the ISLE of WIGHT has no effect on Gutta Percha Tubing.

THE GUTTA PERCHA COMPANY, PATENTEES, 18, WHARF-ROAD, CITY-ROAD, LONDON.

WILLIAM S. BURTON'S GENERAL FURNISHING IRONMONGERY CATALOGUE may be had gratis, and free by post. It contains upwards of 400 Illustrations of his illimited Stock of Electro and Sheffield Plate, Nickel Silver and Britannia Metal Goods, Stoves, Fenders, Marble Mantelpieces, Kitchen Ranges, Gaseliers, Tea Urns and Kettles, Clocks, Table Cutlery, Baths and Toilet Ware, Turnery, Iron and Brass Bedsteads, Bedding, Bed Hangings, &c. &c., with Lists of Prices, and Plans of the 16 large Show Rooms at 39, Oxford-street; 1, 1A, 2, and 3, Newman-street; and 4, 5, and 6, Perry's-place, London.

ALLEN'S ILLUSTRATED CATALOGUE of PATENT PORTMANTEAUS, with four Compartments; DESPATCH BOXES, WRITING and DRESSING CASES; TRAVELLING BAGS, with square opening; and 500 other Articles for travelling. By post for two stamps.

J. W. & T. ALLEN, Manufacturers of PORTABLE BAR-BACK-ROOM FURNITURE and MILITARY OUTFITTERS. (See separate Catalogue.) 18 and 22, Strand.

FISHER'S DRESSING CASES; FISHER'S NEW DRESSING BAG; FISHER'S PORTMANTEAUS, and TRAVELLING BAGS, 188, STRAND. Catalogues post free.

FURNITURE and LOOKING GLASSES.—C. NOSOTTI begs most respectfully to announce to the Public and his Patrons in particular, the commencement of a portion of his Premises requiring rebuilding and enlargement, it is absolutely necessary to effect an immediate CLEARANCE of the valuable and *recherché* STOCK, which comprises Looking Glasses of every description, Cabinet and Upholstery Furniture suitable for the mansion or cottage. The Prices are attached in plain figures, and to save the trouble of Sale by Public Auction, a reduction of 20 per cent. will be made from the marked prices. A further allowance of 5 per cent. on purchases of 50l. and upwards. No charge for packing. Families furnishing will find this an opportunity such as seldom offers.—N.B. Every article warranted.—At C. NOSOTTI'S Manufactory, 398 and 399, OXFORD-STREET.

HEAL & SON'S NEW ILLUSTRATED CATALOGUE contains Designs and Prices of 150 different Articles of BED-ROOM FURNITURE, as well as of 100 Bedsteads, and Prices of every Description of Bedding. Sent free by post.—HEAL & SON, Bedstead, Bedding, and Bed-room Furniture Manufacturers, 196, Tottenham-court-road, W.

CHUBB'S LOCKS, with all the RECENT IMPROVEMENTS; STRONG FIRE-PROOF SAFES, CASH and DEED BOXES.—Complete Lists of Sizes and Prices may be had on application.

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DON'T BEAT YOUR CARPETS.—They can be thoroughly cleansed from all impurities, the colours revived by pure washing, and promptly returned. Price 3d. and 4d. per yard; Turkey and extra heavy Carpets in proportion. Blankets, Quilts, Counterpanes, Table Covers, Curtains, and all kinds of heavy goods purely washed and finished in the best style, at a moderate charge, by the METROPOLITAN STEAM WASHING COMPANY, 17, Wharf-road, City-road. All goods promptly returned. Orders by post immediately attended to.

THE PEN SUPERSEDED.—Marking Linen, Silk, Cotton, Books, &c. with the PATENT ELECTRO-SILVER PLATES prevents the ink spreading and never washes out. Initial Plate, 1s.; Name, 2s.; Set of Moveable Numbers, 2s.; Crest Plate, 5s.; with Directions. Post free for stamps.—T. CULLETON, Pateutee, 2, Long-acre, one door from St. Martin's-lane.

GLENFIELD PATENT STARCH, USED IN THE ROYAL LAUNDRY, And pronounced by HER MAJESTY'S LAUNDRESS to be THE FINEST STARCH SHE EVER USED. Sold by all Chandlers, Grocers, &c. &c.

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WHITE'S MOC-MAIN LEVER TRUSS is allowed by upwards of 200 Medical Gentlemen to be the most effective invention in the curative treatment of HERNIA. The use of a steel spring, so often hurtful in its effects, is here avoided: a soft bandage being worn round the body, while the requisite resisting power is supplied by the MOC-MAIN PAD and PATENT LEVER fitting with so much ease and closeness that it cannot be detected, and may be worn during sleep. A descriptive circular may be had, and the Truss (which cannot fail to fit) forwarded by post, on the circumference of the body, two inches below the hips, being sent to the Manufacturer,

MR. WHITE, 228, PICCADILLY, LONDON.

ELASTIC STOCKINGS, KNEE CAPS, &c. for VARICOSE VEINS, and all cases of WEAKNESS and SWELLING of the LEGS, SPRAINS, &c. They are porous, light in texture, and inexpensive, and are drawn on like an ordinary stocking. Price, from 7s. 6d. to 16s. each; postage 6d.

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HARVEY'S SAUCE.—The admirers of this celebrated FISH SAUCE are particularly requested to observe, that none is genuine but that which bears the name of WILLIAM LAZENBY on the back of each bottle, in addition to the front label used so many years, and signed ELIZABETH LAZENBY, 6, Edwardes-street, Portman-square, London.

LEA & PERRINS' WORCESTERSHIRE SAUCE imparts the most exquisite relish to Steaks, Chops, and all Roast Meat Gravies, Fish, Game, Soup, Curries, and Salad, and by its tonic and invigorating properties enables the stomach to perfectly digest the food. The daily use of this aromatic and delicious Sauce is the best safeguard to health. Sold by the Proprietors, LEA & PERRINS, 19, Fenchurch-street, London, and 6s, Broad-street, Worcester; and also by Messrs. Barclay & Sons, Messrs. Crosse & Blackwell, and other Oilmen and Merchants, London; and generally by the principal Dealers in Sauce. —N.B. To guard against imitations, see that the names of "Lea & Perrins" are upon the label and patent cap of the bottle.

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PRIZE MEDAL, PARIS EXHIBITION, 1855.

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A COOLING and REFRESHING REQUISITE for the TOILET.—OLDRIDGE'S BALM of COLUMBIA is the most certain remedy for restoring and strengthening the Hair. By it Whiskers and Moustaches are produced and beautified. The most delicate head-dress or bonnet can be worn without fear of soiling.—Sold by all Perfumers and Chemists, wholesale and retail, in Bottles, 3s. 6d., 6s. and 11s., and by the Proprietors, C. & A. Oldridge, 13, Wellington-street North, seven doors from the Strand.

DO YOU WANT LUXURIANT HAIR, WHISKERS, &c.?—If so, use MISS COUPELLE'S CRINUTRIAR, which is guaranteed to produce Whiskers, Moustachios, &c., in a few weeks, and restore the Hair in baldness, from whatever cause, prevent its falling off, strengthen Weak Hair, and effectually check Greyness in all its stages. If used in the nursery, it will avert Baldness in after life. Sold by all Chemists, price 2s., or will be sent, post free, on receipt of twenty-four postage stamps, by Miss Coupelle, 69, Castle-street, Oxford-street, London.—Testimonials:—"I have ordered its use in hundreds of cases with success." *Dr. Walsh.*—"I have sold it for eleven years, and have never heard a complaint of it." *Mr. Sangar, Chemist.*—"My hair is quite restored." *E. James, Esq.*—"After nine years' baldness, its effects are miraculous." *W. Mahon.*

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LA DUCHESSE PERFUME, the most agreeable and durable of the day. Price 3s. 6d. Obtainable of every vender of Perfumery. None genuine without *Phillipson & Co.'s Signature*, 1, Budge-row, St. Paul's, London.—*The Pomade*, 3s. 6d. —*The Oil*, 3s. 6d.—*The Cosmetic Fixateur*, 1s. and 2s.—*The Soap*, 1s. 6d.: all scented with this delicious Perfume.

DR. DE JONGH'S

LIGHT-BROWN COD LIVER OIL

Has now, in consequence of its marked superiority over every other variety, secured the entire confidence and almost universal preference of the most eminent Medical Practitioners as the most speedy and effectual remedy for CONSUMPTION, BRONCHITIS, ASTHMA, GOUT, RHEUMATISM, SCIATICA, DIABETES, DISEASES OF THE SKIN, NEURALGIA, RICKETS, INFANTILE WASTING, GENERAL DEBILITY, and all SCROFULOUS AFFECTIONS.

Its leading distinctive characteristics are:

COMPLETE PRESERVATION OF ACTIVE AND ESSENTIAL PRINCIPLES, INVARIABLE PURITY AND UNIFORM STRENGTH, ENTIRE FREEDOM FROM NAUSEOUS FLAVOUR AND AFTER-TASTE, RAPID CURATIVE EFFECTS, AND CONSEQUENT ECONOMY.

OPINION OF **A. B. Granville, Esq. M.D. F.R.S.**
Author of 'The Spas of Germany,' 'The Spas of England,' 'On Sudden Death,' &c. &c.

"Dr. Granville has used Dr. De Jongh's Light-Brown Cod Liver Oil extensively in his practice, and has found it not only efficacious, but uniform in its qualities. He believes it to be preferable in many respects to Oils sold without the guarantee of such an authority as De Jongh. *Dr. Granville has found that this particular kind produces the desired effect in a shorter time than others, and that it does not cause the nausea and indigestion too often consequent on the administration of the pale Newfoundland Oils.* The Oil being, moreover, much more palatable, Dr. Granville's patients have themselves expressed a preference for Dr. De Jongh's Light-Brown Cod-Liver Oil."

Sold ONLY in Imperial Half-pints, 2s. 6d.; Pints, 4s. 9d.; Quarts, 9s.; capsuled and labelled with Dr. De Jongh's stamp and signature, WITHOUT WHICH NONE CAN POSSIBLY BE GENUINE, by many respectable Chemists throughout the United Kingdom.

WHOLESALE AND RETAIL DEPÔT,
ANSAR, HARFORD & CO. 77, STRAND, LONDON, W.C.
DR. DE JONGH'S SOLE BRITISH CONSIGNEES.

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